1663

A first book of Social Studies

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YOUR FATHER AND MINE

A First ~~Book~~ of Social Studies

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INSTITUTE OF EDUCATION FOR WOMEN
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For as we have many members in one body, and all members have not the same office: so we, being many, are one body in Christ, and every one members one of another.

ROMANS xii. 4, 5.

FOREWORD

Social Studies is a new group subject, the content and aims of which are still far from being settled. My own view is that it should contain what the old academic disciplines of Geography and History have of value to offer to future citizens, together with much which would be called Civics and some elementary but fundamental notions of Economics. This is often an uneasy, perhaps even a forced companionship, but in taking man's primary needs as my topics for this text I hope that I have been able to mix something of all four without undue straining. Obviously too, at places there has been only a wafer-thin partition between Social Studies and General Science and this might by many teachers be broken through with advantage to both group subjects. That I have not done so is because I have necessarily had to circumscribe my treatment to give some cohesion to the text. No attempt will be made to cover the entire fields of Geography or of History, treated as separate subjects for school purposes.

To fit easily into the curriculum of the Secondary School, the approach to Social Studies must be realistic and practical. I believe that it should begin from the immediate surroundings of the child, and this consideration accounts for three of the features peculiar to this book. The exercises which precede some sections and many of those which follow each chapter are, I hope, so framed as to be applicable to most areas. They are intended to suggest and encourage observation by the pupil himself. It is certain that a maximum number of contacts must be made with the real world beyond the classroom. The teacher will see that the text suggests but cannot deal exhaustively with some of the many possibilities of effecting such contacts. These would include visits by tradesmen and local government servants to the school as well as corresponding walks and visits to be made by the children. Further, their own parents and the histories of their own families are interesting and informal sources of information of considerable value, which we cannot afford to neglect.

A good citizen is more than a well-informed one. The inspirational aspect of Social Studies is most important but teachers will know how little can be achieved in that way by direct teaching. To give this book a central theme and perhaps later to lead to the formulation of ideals of citizenship, the point has been continually stressed that individuals everywhere in the world are to-day interdependent, economically and socially. This theme seemed most suitable for my purpose since so much else of right living and thinking individually, nationally and internationally derives from it.

The following is a brief summary of suggested titles and topics for the books projected for this series :—

BOOK I. 11-12 years. *Your Father and Mine*

How people here and elsewhere, today and yesterday, build their houses, make their clothes and obtain their food.

BOOK II. 12–13 years. *Your Town and Mine*

The basis of our industry—power, machinery and transport. Plantations and colonies. Our trade with the Empire. The New Industrial Revolution. The changing basis of our existence.

BOOK III. 13–14 years. *A Family of Nations*

Development of Parliamentary and local Government. Taxation and Spending. Responsibility for relations with colonial peoples. Australia and Canada as Dominions: dominion status. Their problems, in relation to historical, political and economic background. Colonies growing up. Direction of Imperial Trade.

BOOK IV. 14–15 years. *Living Together*

Laws and Byelaws. U.N.O., and International Law. Trusteeship. The Big 5 especially U.S.A., U.S.S R. Trade Relations. Cultural Relations. Britain in Western Europe. Our responsibility.

ACKNOWLEDGMENTS

Many friends have helped me in the writing of this book; to all of them I offer my most sincere thanks and hope that they will approve the use I have made of their suggestions and advice. I would particularly thank those who have permitted me to write up personal interviews with them—Mr. and Mrs. N. Houson, Mr. T. Cottrell, Mr. G. Hamblin, Mr. G. Hemming and Mr. F. P. Millward, who all belong in or near Droitwich. I am deeply indebted to Dr. E. Shirley Jones, Mayor of Droitwich, for permission to interview him and to publish local photographs; to Mr. G. L. Robinson, M.I.Mun. E., M.R.S.I., Borough Surveyor of Droitwich for many short interviews and a great number of kindnesses, not least the loan of a camera and various pictures in the text; to Miss M. H. Thornton, A.L.A., Children's Librarian, Lancaster Public Library, for the careful and happy selection of "Suggested Reading" preceding each main section; and to my colleagues Mr. L. Buchan, M.A. and Mr. R. Entwistle, M.A., whose advice I have greatly valued and who read the text through to its considerable improvement.

R. D. B.

Droitwich, *May, 1948*

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INTRODUCTION

It would be a fairly safe guess that your mother was up this morning long before she called you. Let us assume that your mother stays at home to do all the many jobs needed to run a house properly—cleaning and more cleaning, cooking, washing, sewing, darning and shopping, to mention only a few, and let us assume that father goes off to work.

Perhaps your father works in a factory making things; perhaps he buys and sells things or helps other people to buy and sell things by keeping accounts or working in a bank. Perhaps he is a bus or tram or engine driver who helps to carry people, or things, from place to place.

Let us think of your father as a man who makes things in a factory. He leaves home at a quarter or half past seven, after your mother has given him breakfast. He meets his workmates as he goes down the road. They buy newspapers at the corner shop. On the tram, or bus, they talk and read.

When they get to the factory they "clock in." That means that they push cards on which are written their names into a special sort of clock which stamps on the times of their arrival. Long belts run from overhead shafts to drive the machines. They begin to turn at 8 o'clock. From then until 12 they do not stop.

This happens almost everywhere in this country between 8 o'clock in the morning and midday. It does not matter whether your father makes screws on a screw-cutting machine, or cloth on a loom, or any one of a thousand other things, he works hard for four hours.

At midday, he and his friends stop to eat. At the end of the dinner hour, at, say, 1 o'clock, they are at work again making the same things as they did in the morning. At five they leave work and come home for tea.

Now why do they work? To earn their wages, you say? Yes: you are right. They work so that your father and mine can draw money at the end of the week.

What is the money for? To buy you sweets; to go to the pictures with? Partly for these, but mostly to buy three very, very important things without which you would soon die. These three things are somewhere to live, something to wear and something to eat. We shall find that men everywhere in the world, yesterday, to-day and to-morrow, needed, need and will go on needing these three things—Shelter, Clothing and Food. How they get them and what sort they get depends partly upon where they live. In this book we shall see men and women in this country and abroad, working to give you, their children, wherever you may be, a home to live in, clothing to wear and food to eat.

Nowadays, your father does not build his own house, make his own clothing and grow his own food. Perhaps your mother knits some things and sews others for you to wear: perhaps your father grows potatoes and cabbages in his garden or allotment: but if you had only those things your mother made to wear and only the things your father grew to eat, you would not do very well, would you? Your father and mother rely upon being able to buy a great deal of what you need from the shops. Your father buys what you need by the work he does in the factory. By making screws or weaving cloth, he earns money which the shopkeeper will take for his goods.

There was a time in man's history when a family built, wove and grew all that it could have. There are men living in the world to-day who still provide themselves with nearly everything they have. How that simple way of getting a living has changed into our own very complicated one is what this book is about. Soon you, too, will be working, and whether you make screws or weave cloth you will be getting for yourself first of all, somewhere to live, something to wear and something to eat.

CHAPTER I

BUILDING A HOUSE

THINGS FOR YOU TO FIND OUT

Will you try to find out the answers to these questions:—

1 What is a plan? Could you draw one of your classroom?

2 What tools does a bricklayer use for laying bricks, carrying bricks about, keeping walls level, seeing walls are straight?

3 Why are brick houses built with a space between the two rows of bricks which form the outer wall?

4 Where did the bricks, slate and wood for any house now being built near your home come from?

5 What is the size of a housebrick? Why?

How many of you have never played at building houses? How many of you girls have never played at keeping house? Perhaps, as the fairy tales say, that was long ago: but it is fairly certain that you all have at some time or another. Since then you may have watched houses being built. If so, you will know that whether they are brick, or whether they are "prefabs," men always come first to dig deep ditches in which to lay sewers, and gas and water mains. Then they begin making the roads above them. The local councils must see that all these things are done before the builders' workmen come along with picks and shovels and concrete mixers to start laying the foundations, as they are called, of the houses. Let us watch these men, and those who follow them at their work.

Usually they first mark out the plan of the house with strings. Then they dig a narrow trench with a level bottom and the same shape as the ground floor. Often they line the bottom of the trench with concrete. Bricklayers follow them and begin to build the walls. The outer ones are really double, for they are two bricks thick with an air space left between the inner and outer bricks. Walls inside the house are only a single brick thick. After they have laid three or four rows the bricklayers put in a layer of slate or other waterproof material: this is called "the damp course." Then the work of building goes on again: the walls rise higher and higher until the bricklayer can no longer reach their tops from the ground and so scaffolding is built up to carry narrow platforms all round the house. Then, one day there stands the shell, roofless, without doors, without windows and quite empty.

Carpenters come in next to make the floors of wooden planks and the roofs of wooden joists. They fit doors and windows, the staircase, and any inside cupboards, wainscoting and panelling. Plasterers follow them to prepare the smooth surfaces of walls and ceilings. Plumbers come to put in taps and wash-basins, bath and lavatory fittings. A glazier comes with glass for the windows, and perhaps for the panels in the front door. Meanwhile, electricians fit lights, and the gas company sends men to bring pipes from the main under the road and to fit a gas cooker. Last of all comes the painter with buckets, ladders and paint pots. Before you can live in the house, mother, perhaps father too, has the heavy job of cleaning up the mess made by the bricklayers, the carpenters, the plasterers, the plumbers, the glaziers, the electricians, the gas-fitters and the painters —all eight kinds of workmen.

All eight kinds of workmen? Why, you built a house yourself once, didn't you? Yet there are really many more than eight who worked together to build that house. Have you thought who dug the clay, who moulded it, who baked it in a great kiln to make the bricks? Who chopped down the tall fir trees in the snow-covered countries across the oceans so that someone could saw the trunks into planks? Who planed the planks which had been sawn from the trunks that were felled in the countries across the seas? Who built the planed planks into doors and window frames? Who carried the window frames and doors across the seas so that our builders could build them into the houses going up everywhere in this country?

If one of these many workers had not done his job there would have been a different house, or indeed no house at all. Nearly everything we use to-day comes to us because many men in this, and in other countries, work together. It has not, as we shall see in a moment, always been quite as complicated as this, though for a long time now men have agreed to share the work of building houses and ships and sheds, of making cloth and shoes and furniture. Where work is shared out among a number of people, and where each man does only one special job, we call it "the division of labour." Have you ever heard the old saying "Practice makes perfect?" Some years ago you found it quite difficult to do up buttons, but you have gone on practising until you can do these things skilfully. Because the bricklayer spends all his time doing one thing he becomes very quick and skilful at it, too. Dozens of other men helping somehow to build houses do only one job. They also become quick and skilful. If each one of these men tried to build a complete house from foundation to roof for himself, what would happen? He would certainly be much slower and less skilful, wouldn't he? When the skilful work of each of these different men is added together they will have made many, many more houses than if each had tried to do everybody else's job for himself.

What is true of houses is true also of nearly everything else we use to-day. For example, where did your coat begin? Who helped to make it? Where did your shoes begin? Who helped to make them? If you think for a little while you will find that most of the world is somehow or another helping most of the rest of the world, which means that your father helps the rest of the world and my father helps the rest of the world. That must mean too that they both help each other.

THINGS FOR YOU TO DO

1 Draw a plan of your classroom to show where you sit.

2 Make drawings to show what you mean by "scaffolding," "wainscoting," "damp course," "foundations."

3 Which must be done first, second, third and so on of the following:—

1 Plastering
2 Making the floors
3 Building the walls
4 Digging foundations
5 Painting and decorating
6 Laying sewers, gas and water mains
7 Glazing

THINGS FOR YOU TO FIND OUT

Will you find out:—

1 If there are any buildings made of wood, stone, part wood and plaster, concrete or aluminium near your home? Where exactly are they found? On a map of your town show where they are.

2 Did the stone come from some quarry nearby? Is stone still being taken from it; if not, how long has it been disused?

3 Visit a quarry or cutting. Look carefully at the rock and if you can, draw it. Note any cracks or beds in the rock.

4 Are any bricks or tiles made near your home? Where does the clay come from to make them? How are they made?

5 Is there any lime burnt or any cement made near your home? How is it done? What kinds of rock are used?

6 Which is the oldest part of your town? Could you tell this from the buildings? Which is older, the church or the cinema? How do you know?

7 Look at the bridges over streams, canals, roads and railways. What are they built of? Is there any reason for this?

8 Could you guess which brick buildings, especially houses, are older than the others? How do you know this? Is it because they are where they are or because of the "style" of building?

9 What sort of house would you like to live in? What would you want it to be made of?

10 When was your house built?

11 Is your school an old building or a new one? How do you know?

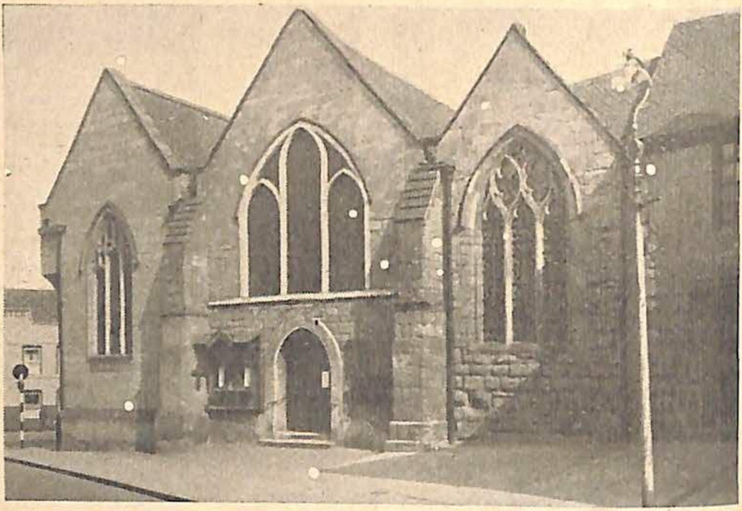
CHAPTER II

YOUR HOUSE AND MINE

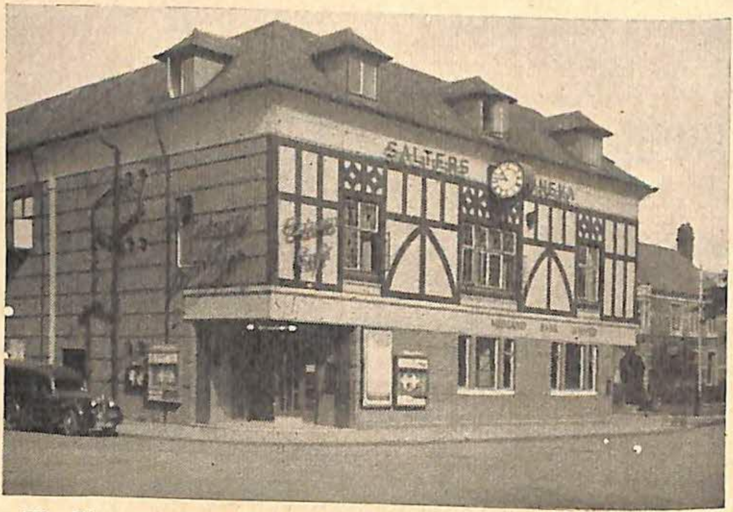
IN your town there are some old and some new buildings. For example, the cinema is likely to be new, the church old. One of the differences between them is that whereas the cinema is built of brick, concrete and steel, the church is probably built of stone and wood. This is because in days gone by men built with whatever they could find near their town or village. Sometimes they found stone, sometimes they dug clay for bricks, but whatever it was it could not be brought from any great distance. Can you guess why that would be? Yes; you are right if you say that your church was built long before the days of canals, railways, and good roads with great lorries running along them. Then things were carried on a man's back, or in baskets, called panniers, slung across a horse, or in great, heavy, lumbering wagons. Men learnt to build with what they could find nearby in those days. Houses, too, were built of local materials.

Look at the older part of your town or village. Are there any houses of black wooden beams and panels of white-washed plaster or bricks? These are called "half-timbered" houses. In Britain a few centuries ago there was no shortage of wood and it was widely used for building. Often the entire house was of wood, and London in the seventeenth century was largely built of it—which is why the Great Fire in 1666 went on for four days and nights before it could be stopped, and why so much of the town was completely destroyed.

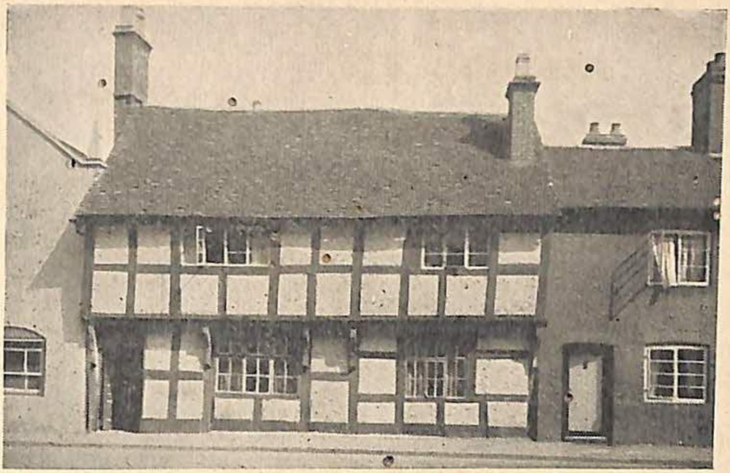
The white panels of plaster between the heavy beams of the "half-timbered" houses, which were frequently built in the days of Queen Elizabeth and later, were probably in the first place made of springy willow sticks woven together like the side of a basket or hamper. Over this, mud, mixed with mortar and hair or straw to bind it together, would be daubed. All of these things could



1 The Church in the centre of my small town is built of a softish red sandstone found not very far away. Can you tell from the picture which is the newest section? Are you guessing from the state of the stones only?



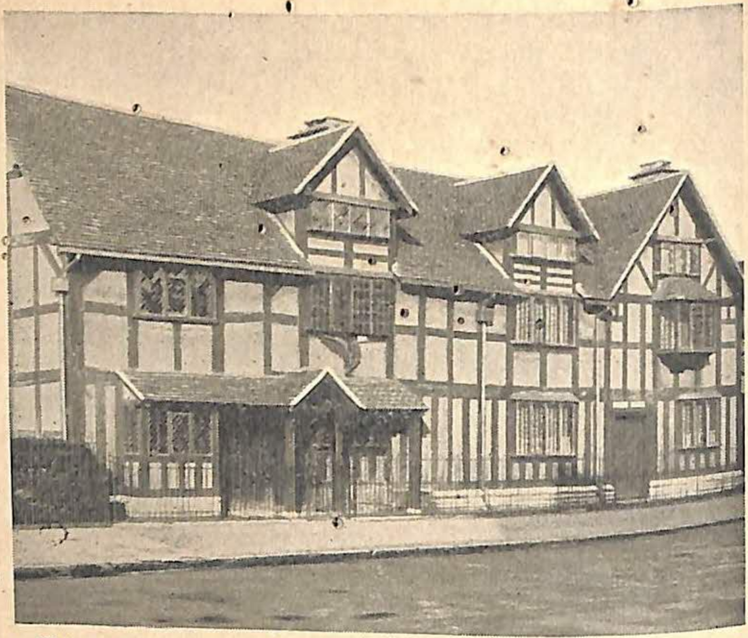
2 The Cinema in my town is a new building of brick and steel girders. Do the black timbers on the front help to make the building stronger? Are they only for show? If that is so, do you think it would be better to do without them? (Compare Illustration 3).



3 Here is a house in my town built about 1650. Are the black wooden beams part of the building? How do you know? Is there any part of the house where they are false? Do you notice anything about the size of the windows? Would the rooms be dark?

usually be found nearby as well as the straw or reeds for thatching the roof.

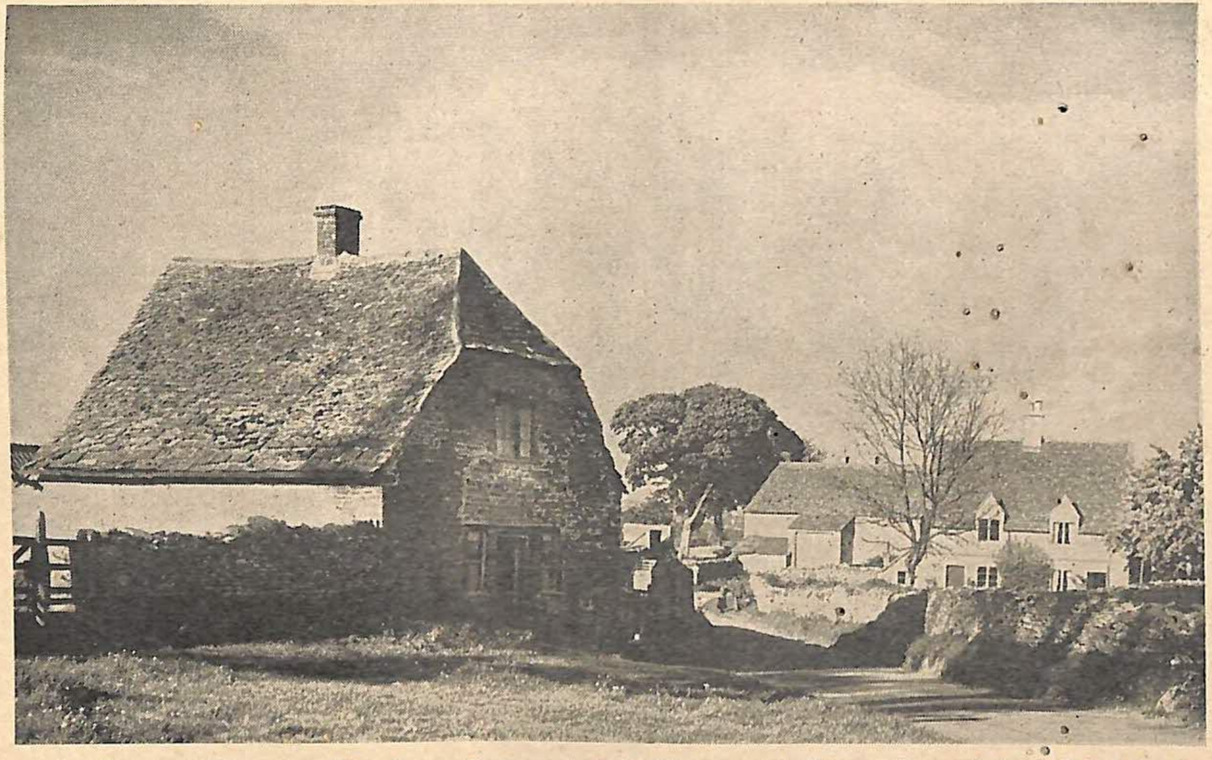
There would be fewer men doing different jobs in the building of such houses as these. The builder built everything, did the woodwork, and made the leaden sink. A thatcher (have you got a boy or girl in your school named Thatcher?) would be employed to make the roof. No electrician would be needed; no gas fitter would come in to bring pipes from the mains; no plumber would fit taps or baths. Do you know why these men would not be needed? The house might be the only one being built in that district, although several towns, especially London, were growing quickly in the seventeenth century. There were no large building estates such as we know grow up on the outskirts of our big towns to-day. People still lived in what you and I call the country, and there were many fewer people. The sort of Britain you and I see, as we look around us, or travel about, has only grown up in the last hundred



4 This is the house in which William Shakespeare was born. Where is it? Is it near my home town? (Compare Illustration 3.) What is it made of? Which is the newest part of the house? What is the correct name for windows of this kind?

years. Now, if in Elizabeth's England there were fewer houses being built, there would also be fewer workmen, and there would be less chance for each man to do only that job which suited him best: he would have to do many other jobs besides. It is only worth while to have many different men each doing one particular job if there is a great amount of work to be done. To-day, there are a great many houses to be built and, in any case, work from many districts can be done altogether in one place nowadays because it is fairly easy to carry the finished jobs to the point where they are needed by road or rail or steamer. Because of this the labour of building houses (or making anything else for that matter) can be divided among a large number of men each of whom does only one special kind of work.

The houses which many of you are likely to know



5 An old Cotswold Cottage and Farmhouse. Notice again the building material. Why are there no hedges? It looks lovely, but what do you suppose the cottage is like to live in? At what season of the year was this photograph taken?

were most probably built in the last half of the nineteenth century when England was already the Workshop of the World and great cities had grown up on the coalfields of the north of our country. By then the canals, railways and roads could carry bricks and slates about the country and so houses built of these materials are the ones we mostly see to-day.

THINGS FOR YOU TO DO

1 What do you mean by " half timbered," " thatch," " back to back " ? Can you draw these ?

2 Match the following parts of sentences and then write them down:—

- (1) Many houses in London before 1666
- (2) In Elizabeth's reign no houses
- (3) A thatch is the name given to
- (4) Churches are often made of

- (1) had electricity or gas
- (2) a roof of reeds or straw
- (3) stone because it was difficult to carry other building material any distance.
- (4) were made of wood

CHAPTER III

NEW HOMES FOR OLD

6 Have you any backyards like this in your town? Even these are much less crowded than many houses in the early 19th century. Do you think houses are likely to be clean and healthy when they are as close together as this?

At the beginning of the nineteenth century houses were wanted quickly because the number of people was growing greater and greater, and thousands were coming from the countryside to find work in the towns. These houses were built crammed together near the factories, for there were then no trams or buses to take people to and from their work. Many of the rows of houses were built "back to back"—this is, they had no through passage ways at all. Others were separated from each other by narrow alleyways fifteen feet or so across. They stood in straight rows round a dark square court, without gardens, and facing roads dull, treeless and sullen, and soot from the factory chimneys rained down upon them.

No one bothered about sewers or water supply. In 1840 quite a lot of middle-class houses had water closets, but the working-class districts about which we are talking had scarcely any at all. In some of the worst yards there were no lavatories of any kind, and all the filth was allowed to collect there in the open until it was removed in carts, which did not happen very often. Sometimes, too, pigs would be kept in these crowded houses. Rats and flies spread diseases which, thank goodness, are not allowed to occur to-day, partly because we know how to stop them, and partly because sewers and clean drinking water must now be supplied by the local councils.

This is what a famous Englishman, Lord Ashley, later the Earl of Shaftesbury, saw in Holborn at this time—"Frying Pan Alley was a very famous alley in Holborn . . . it was very narrow . . . In the first house I turned into there was a single room: the window was very small and the light came through the door. I saw a young woman there and I asked her if she had been there some little time. 'Yes,' she said, her husband went out to work and was obliged to come there to be near his work. She said, 'I am miserable.' 'What is it?' I asked. 'Look there,' said she, 'at that great hole; the landlord will not mend it. I have every night to sit and watch, or my husband sits up to watch, because that hole is over a common sewer and the rats come up, sometimes twenty at a time, and if we did not watch for them they would eat the baby up.'"*

Most of these rows of back to back tightly-packed houses are worse than any slums we have to-day, and they became worse and worse as more and more people crowded into them. The young children who played in the slum courts and alleyways had no fresh air, no sunshine, and as we shall see later, they often had very poor food. They drank filthy water and because there was no quick way of getting milk from the country, they had to do without it. So many of them grew up stunted and twisted, with bow legs and poor teeth. There were no schools to see that they had milk and dinners, and often

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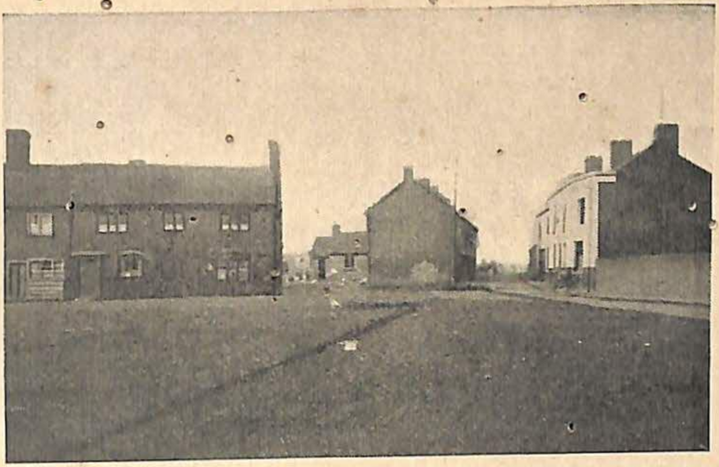
* Sherwood Taylor: *The Century of Science*, p. 71.

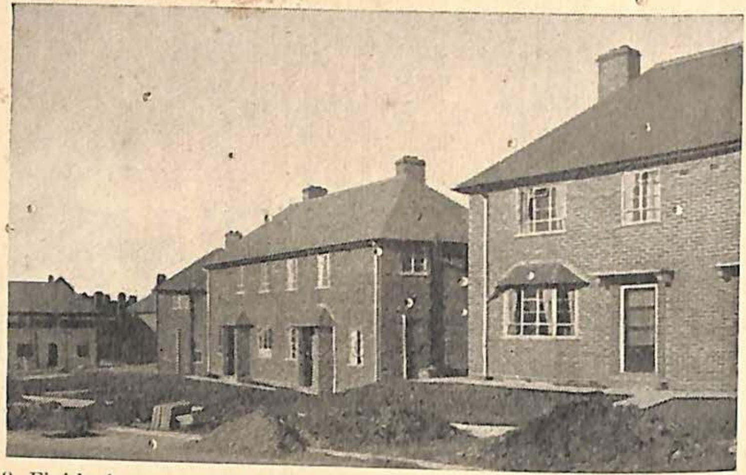


7 Houses in my town 25 years ago. (Compare Illustrations 3 and 8). Are these houses as good to look at? Why not? Notice the litter and untidyness of the ground nearest the camera.

at the age of six they went to work for twelve hours a day.

The houses were dark and leaky and full of vermin. After a Public Health Act passed by Parliament in 1875 the city councils were given the power to make rules—or bye-laws as they are called—saying what kind of houses could be built in the town. Gradually the filthy old places have been cleared away since then. The families who lived in them went to new building estates which had larger, cleaner houses with running water and lavatories, but which were not laid out in beautiful surroundings. You will probably know many dull rows of these.

During the First World War (from 1914 to 1918) house building stopped, as it did during this Second one. When it ended, millions of new houses were needed and in 1919 an Act of Parliament was passed which allowed local councils to build houses for the working men who had come back from the war. These houses were built in smaller groups, but again they were so urgently needed that they were often not at all well arranged, and it is



8 Finished corporation houses in my town. Soon there will be trees where the piles of soil are now. The householders will perhaps turf the spaces in front of their houses, or perhaps they will set them out with flowers. Which would you do? Are these houses detached? What are they made of?

only in the last twenty years, certainly since your mother and father were as small as you are, that new houses have begun to be built facing roads planted with trees, and often with lawns separating the footpaths from the highway. Often such houses are built in pairs, so that a middle wall without doors or windows divides one building under one roof into two. We say that these houses are "semi-detached." Can you tell me, then, what a " detached " house is ?

It is the people of the cities—your father and mother and mine—who elect the councils and through them they have had many of the slums cleared away. They, too, have seen to it that the new building estates are planned with open spaces, parks and recreation grounds as well as shops so that your mother need not waste too much of her time on shopping. If you live in a part of the town like this, look after it, won't you ? Don't throw paper and tram tickets about. Don't make it look untidy. Don't break or cut the trees, or kick up the lawns. Thousands of boys and girls would be glad to see them.

Millions in the past in our great cities never saw them at all.

THINGS TO DO

1 What do we mean by "slum clearance," "detached houses," "semi-detached houses."

2 If your town is in a valley, in which part, high or low, are the slums or old crowded buildings? Do you know why your town stands in the valley?

3 Ask your mother to tell you something about how your town has spread in her lifetime.

4 Write out these sentences and put in the missing words :—
The . . . . . part of my town is less . . . . . than the inner because houses are now built according to a . . . . . drawn up by the . . . . , ... Early in the nineteenth century houses were built close to the . . . . . where people worked. Now workers can get to work easily by . . . . . or . . . . . and so new . . . . . have spread into the . . . . .

5 Draw a cross section of an old road. Compare it with a cross section of a new one.

6 Look carefully at the names of streets in your town. Will they give you any clue as to when the streets were named?

CHAPTER IV

THE BRICKLAYER

THINGS FOR YOU TO FIND OUT

If you know a bricklayer will you ask him some of the questions I asked Mr. Cottrell—such as, "How did you start?" "What wages do you get?" "Have you served an apprenticeship?" Make a list of these questions as you read this chapter.

9 Mr. Cottrell, the Bricklayer.

I went to see Mr. Cottrell at his work on a new building estate about ten minutes walk from my home. It was raining when I got there, so he could not go on working and the foreman kindly lent us his yellow-painted shed to sit in while we talked. I told Mr. Cottrell that I was trying to write about "Somewhere to Live," and how houses are built, and asked him if he would be kind enough to talk to you about a bricklayer's job to-day. At first, I think, he was not very keen, but afterwards we had a long chat, and this is what he told me to pass on to you.

"How did I start? Well, I went to school, like everybody else until I was fourteen. Then I began learning to be a plumber, but I didn't much like that because part of the work was cleaning the drains, and, well, you know how filthy and greasy they can be. So, when I was just on sixteen I was apprenticed, or, as you might say, put to learn the trade with a master builder. My dad had to pay him £40 to teach me.

Nowadays you don't have to pay a premium any more, though you still have to serve a five-year apprenticeship. In my first year, I stood around and watched and did a bit myself, and made tea, and ran errands for the men. For that I got 7*s.* a week; the same the next year, too. Then, when I was 19 I began to get two-thirds of a proper bricklayer's pay, say, £2 5*s.* 0*d.* a week, and wasn't I pleased with myself! I thought I was pretty good coming home with all that money."

Here he paused for a moment to open the door, and shout to a youth whom we had seen coming down the road. "Here y'are, Mike," he said, passing him a screw of newspaper. Then, closing the door again against the cold and rain he grinned at me and said, "That was me all over at 16. If you're staying long enough you'll get some tea now." He went on with his story. "Well, then, usually when you came out of your apprenticeship at 21 you'd go round to some other builder and work for him for a while so that you had a change and learnt how another master worked his men."

"No," he said, answering my question, "bricklayers usually begin work as bricklayers, not as labourers. Labourers do most things except lay bricks. They dig the foundations, put in the concrete, mix the mortar, and carry the bricks about, and if they are what you call "scaffolders"—that means they put up scaffolding as well as doing other more difficult jobs—they usually get 3*d.* an hour more than the ordinary labourers.

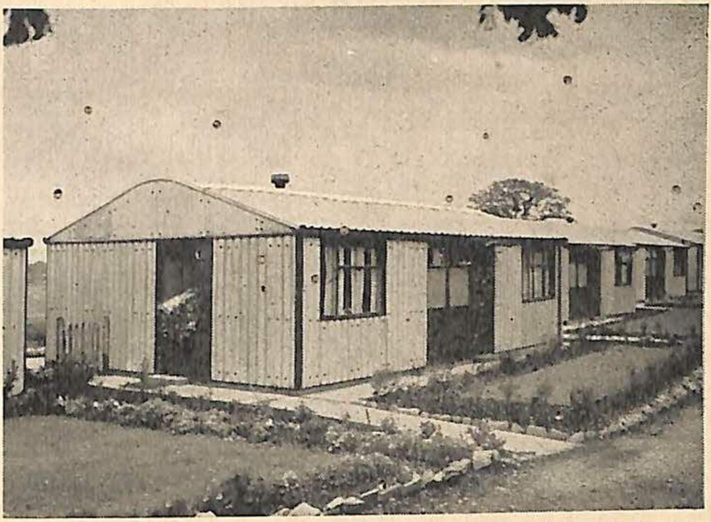
"How long does it take to build a house? Well, it depends on how big the house is, doesn't it?—but you see those corporation houses across the road?—4 bricklayers and 3 labourers might build all of one of those semi-detached pairs, but not put the roof on in, say, 16 to 20 days' work. You might lay 500 bricks a day, and there are about 30,000 in that lot, but you have to think of the extra time it takes to do things like window ledges, and chimneys, and so on."

Mr. Cottrell said that he belonged to his Trades Union. A trades union is founded by all the men who work at a trade joining together. They pay a shilling or sometimes more, each week into the union fund, so that if they are injured at work, the union sees to it that their money is made up for them, or if you like, that they get compensation. The Union does a great many other things for them also. He said that you could not join the Union unless you had gone through an apprenticeship first.

"Yes," said Mr. Cottrell, "I like being a bricklayer, but it's not always quite so good. We sometimes can't work in the bad weather, and if we can't work who pays us? For the first week the builder pays part of our wage, say £4, but after that we have to go on unemployment pay of £2 10*s.* 0*d.* a week, and then it's not very easy with a wife and two children. The foreman usually tries to keep some inside jobs for us—such as putting in grates and sinks, so that we can work with a roof over our heads even if the weather is bad. Last year (1947) we had six weeks off because of all that snow and ice.

"Of course, we have other difficulties, too. One thing I don't like is that we've no canteen, and nowhere to sit and be comfortable in in the dinner hour. You see how it is, there are only a few of us at work on this estate, and when we've finished it, we shall move somewhere else, so it wouldn't be very sensible perhaps to build a canteen. But, of course, because we haven't got one we don't get the same dinner as people who work in big factories, or the kids at school either for that matter, and that means our rations don't go so far, though we do work pretty hard in the open air, and get hungry towards the end of the afternoon!"

Just then the foreman came back. "What's he telling you, Mr. Bramwell?" he said. "He wants to do what we used to do in my young days—have a bricklayer's steak: do you know what that is? Well, it's a kipper fried on a cleaned shovel."



10 Prefabricated houses. Where were they made? What materials are used in making them? Where do these materials come from? Is there any wood in them—any brick?

Then the two of them told me how, when they had first started, the men had sent them out on silly errands such as fetching a barrow-load of chimney holes, or a long piece of chalk line. (Of course, I know you wouldn't be foolish enough to have done those errands, would you ?) Mike came back with the tea, but neither of them sent him off on an errand: it was raining too hard.

Both of them thought that in a few years time houses would be made in pieces in the factories, and the pieces would be brought out to where the house was wanted, and put together there, which would be much quicker and, in the long run, probably much cheaper. This is really what we mean by prefabrication, isn't it ? There is no reason why prefabricated houses should not be as good to live in as those built brick by brick. They thought, though, that brick houses were generally a better job; if you wanted to make them modern some years after they were built you could do so, but in the case of prefabricated ones it would be much more difficult.

I asked about the bricklaying machine which was invented before the war. It had, they said, never been really successful; you could build some straight pieces of wall with it but you could not go round corners and so the bricklayer was still very much needed. What would happen to bricklayers, I wanted to know, if all houses were built in factories? Mr. Cottrell said, "Well, I suppose it will come some day, and when it does I shall have to learn another trade and get on with it as best I can," which was very brave of him because none of us likes to think that he has spent five years learning to do a job and that the job is now finished because new ways of doing things has made it unnecessary.

CHAPTER V

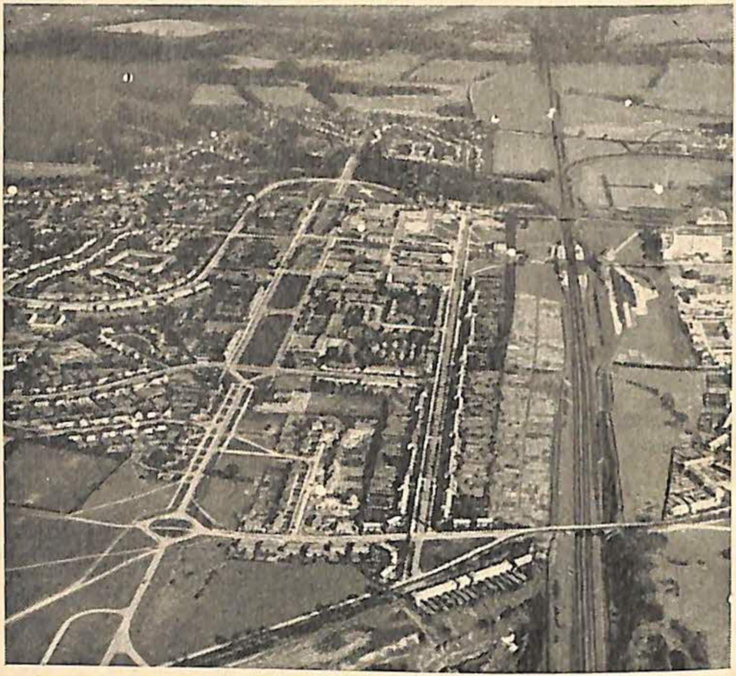
A BUS RIDE

"HERE we are—No. 10: this is the bus we want. You'd like to go upstairs? Go on then. Soon the conductress will come round, and I shall expect to get half fares for you. I shall take tickets out to the terminus, and the Godfrey's farm is only a few minutes walk from there."

The bus starts and crawls its way in low gear, past traffic lights, and through busy streets in the centre of the town, past the big shops and banks, the Library and the Town Hall, past the rows of tightly-packed houses of slate and brick. ("Good heavens! did you see that little boy run across the road after his ball? He was almost under the bus!") Soon we shall come to houses standing in rows, but this time with front gardens, and privet hedges surrounding them. Perhaps in a few minutes more we shall be among the houses of the new estates built facing lawns and tree-shaded flagged pathways.

When I was a youngster, about your age, I can remember playing on the ladders and in the half-finished houses of these estates, which must have been lived in now for twenty years, or more, I suppose. At the bottom of one of the lanes then, I remember, was Hadley's farm with two poplar trees in front of it, and an ivy-covered barn. It had a rickyard, too, and a dirty pond in which we used to throw sticks for old Bill, the wire-haired terrier, to fetch out again. Hadley's has gone now the same way as poor old faithful Bill. The town has spread over it. All along the side of the new wide road which was opened in 1930 are bungalows, houses and gaudy cafés. Shall we never get clear away into the country? The fields with quiet cattle grazing in them are just beyond that ribbon of houses stretching along each side of the road.

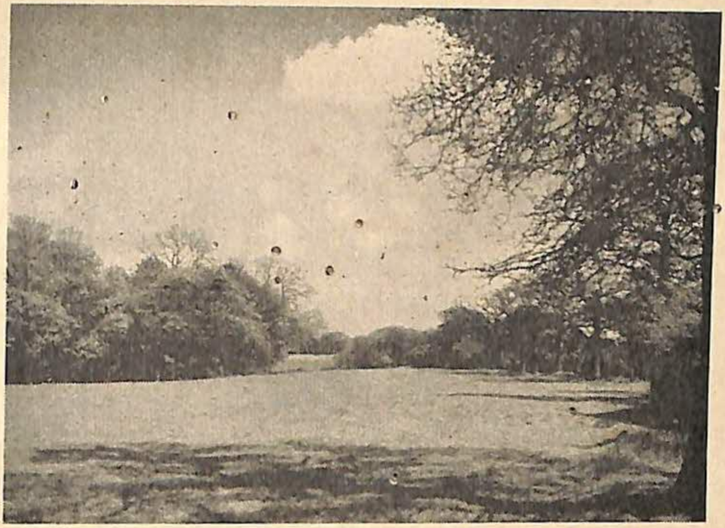
Ah! here we are. The line of houses has stopped at



11 This is part of a "planned city"—Welwyn Garden City. The view is taken from an aeroplane. Notice the number of trees, gardens, open spaces, and the new clean looking factories in the right hand upper quarter of the picture. Do you think this would be a pleasant town to live in compared with that shown on page 61.

last; but, what's this? "Join the Exetown Building Society"; "Don't say paint, say Tint-o-Wall"; "Selo Salts are good for you." Why do they have to put all these signs everywhere, so that we can't see the greenness of the fields and the hedges? Good, come on: off you get. This is the terminus; we walk from here. I'm glad to be off that bus, aren't you?

A good many of you will know how difficult it is to get out of your town. It straggles and sprawls much more now than when your father and mine were children, so that the country seems farther away than ever it did. Why has it grown like that? Well, partly because buses and motor-cars have made it easy for some people



12 Part of the "Green Belt" of Birmingham. It must be kept unlittered and free from hoardings if it is to stay as lovely as this.

to live a good distance away from their work in the centre of the town, partly because as our number of people has gone on increasing, the towns have had to go on growing too, and partly because as the slums in the middle of the towns were pulled down, room somewhere else had to be found for the people who had lived there. So that everyone may be able to get to fresh open countryside at the cost of a twopenny or threepenny bus fare, it has been suggested that the towns should not be allowed to go on growing as they have.

If more people must come to live somewhere near the old towns, new small towns, complete and separate, should be built with a "green belt" of country between them and the larger towns. Such small towns lying away from, but closely connected to, the old city would be called "satellite" towns. They would have their own churches, cinemas, shops, football teams, and so on, but would have good bus services with the older towns round which they were built.

If we are to have green belts as playgrounds, then we must also stop those who put great hoardings for posters, or lines of houses, along the main roads. We want to be able to see the fields and trees and streams, not between the posters and the houses, but quite unspoilt by them. Lines of houses strung along new roads are called "ribbon development." They carry one town into the next, and, travelling about, you never seem to get away from houses. Local councils are now able to stop a good deal of this spoiling of our country, and it is to be hoped that in years to come, you and I, your children and mine, will be able to drive quickly out of the towns and walk or ride among the fields and hedges, woods and streams, which are so beautiful and happy a part of our country.

Well, here we are at Godfrey's farm. This is a piece of land which can still be used to grow good crops and feed sturdy cattle. But unfortunately a great deal of the rich soil of our country has been taken up for building. We must be careful not to let too much of it go for that purpose for we very badly need the food it could grow. As Mr. Godfrey would tell you, it is not only the land that has been taken away from farming: many of the workers have left, too, to go to factories and workshops in the towns where they can earn more money, and have better houses with gas, electricity and running water, and where they are near to shops and cinemas.

Mrs. Godfrey will give you a drink and a slice of cake if you look hungry enough. The Godfrey's farm produces some of the milk you get at school, because it is very easy to bring it into town by lorry along this road. You would hardly know, would you, that there was a farm here tucked away between the stretching fingers of the town? Mr. Godfrey says that his land might be wanted for building fairly soon. I do hope not. It will be even more difficult then to get away from the town, and it will take us even longer to come visiting.

We can make our towns better places in two ways.

We can see to it that the wretched old parts are done away with, and the space they took up left for parks, or filled with wide streets and beautiful buildings. We can also try to stop our towns from spreading across the country, taking up the good land and spoiling it for you and me. We have said that the people of the cities—your father and mother and mine—choose the councils, and that through them they can help to make sure that the towns shall be good to live in for the people who come after them—you, and when you grow up, your children too !

THINGS FOR YOU TO DO

1 What do we mean by "ribbon development," "green belt," "satellite towns" ? Draw pictures to show what these are.

2 Do you know of any hoardings which stop you from seeing the countryside near your house ? What posters are on them now ? Do you think these should be allowed to spoil the view ? What does your mother think ?

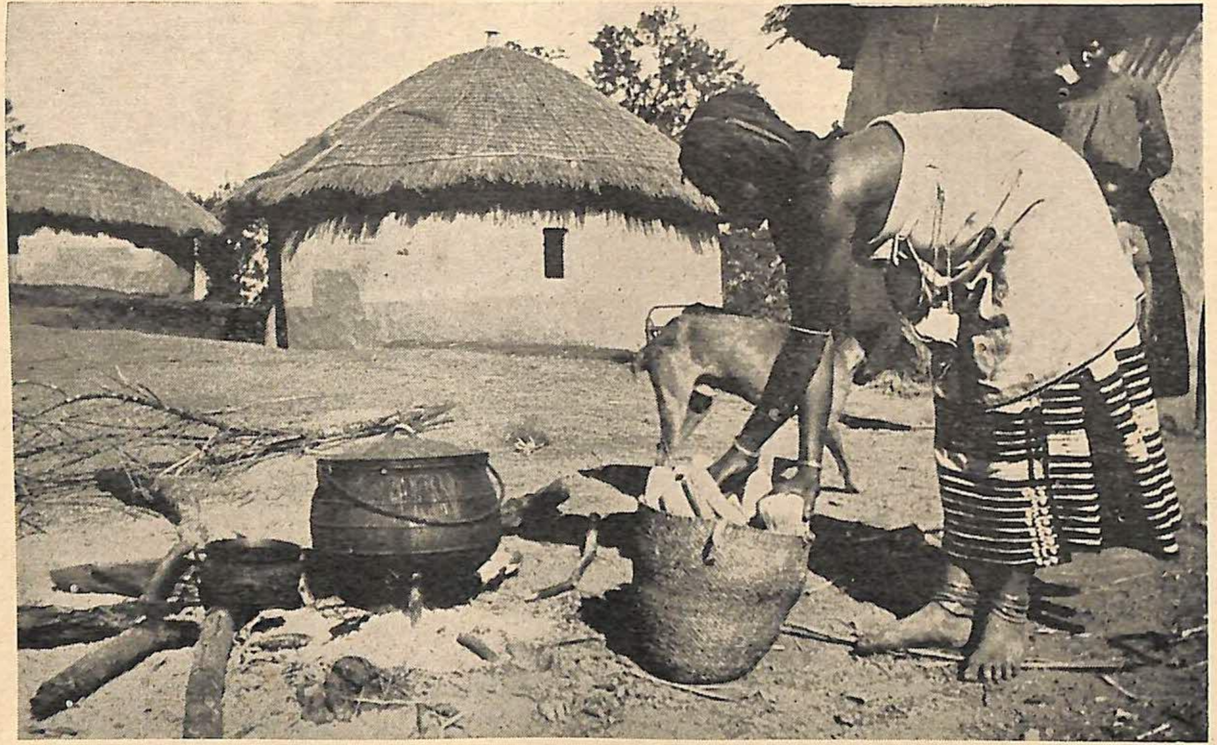
3 Are there any parks near your house ? Can you find out in which years they were opened ? Who goes into them mostly ?

4 If you know a park-keeper will you ask him about his job ? What does he have to do: why does he have to do it ?

CHAPTER VI

OTHER PEOPLE'S HOUSES

OUR own houses used to be built of those things which could be found close by. This is also true of people who live in other countries. Let us visit the Kaffirs on the northern borders of South Africa. Will you find out where this is on your atlas map? Very well, then, you must know that theirs is a country where frost, even in winter, is almost unknown, and where summer heat is very great. Few trees grow there, though you can see tall grasses, and some small thorny bushes and trees. With these materials, and clay, the Kaffirs make quite strong houses. They are circular like a shallow floor-polish tin, and about fifteen feet across. The walls are made of straight branches, or sticks, pushed well into the ground, and then plastered over with clay, rather like the plaster panels in the half-timbered houses of England—do you remember? The roof is a thatch of bundles of grasses which can be cut just outside the door. The one I visited had a floor of cow manure, mud and ashes trampled down hard, so hard in fact that it was black and polished. You may think that this would not be very hard, but you must remember that these people do not wear boots, nor have they any furniture: if they had, the nails of one, and the legs of the other would certainly dig into the floor. Often the walls inside have pictures or designs painted on them. From the inside of the thatch the threads of soot-covered spiders' webs hang down like black icicles. There are no windows and no chimney, so the smoke from the small cooking fire goes out by the door, or filters up through the thatch. The door is just an opening which can be closed at night with a skin cover: it reaches from the ground to the top of the six foot wall, so that a man can walk in upright. Sometimes a number of huts are built together in a little village called a kraal, which from the distant hill tops, looks like a ring of toad stools, for the houses are so built



13 These are round Kaffir Houses built of sticks and mud. Notice the roofs: how are they kept in place? What is the woman in the picture going to do? Why does she cook outside? How do you know that it is a bright sunshiny day?

that a strong circular fence will enclose the cattle of the villagers, and protect them from wild animals.

On the other side of South Africa a thousand or more miles from the Kaffirs live the Bushmen. Theirs is a dry country, not quite desert, but almost grassless. With small dry branches tied together the Bushmen make some sort of a roof to crawl under. They may even build little huts with branches pushed into the ground, covered with grass or reed mats. A Bushman often sleeps on the bare ground behind a little screen which will keep the wind off him, or he may scoop out a bowl in the sand and, covered with a leopard skin, sleep in that. He never lives in a village, and though he is clever enough to make much better houses he does not do so. Can you guess why? It is because the Bushman is always moving. He is a hunter, and must follow wherever his prey might lead him. Such people do not make well-built houses: they cannot stop to make them. To carry any more than is strictly necessary would only be a nuisance to them. The Kaffirs are not hunters: they grow maize (Indian Corn), millet, monkey nuts and beans, and after they have planted them they wait in the same place to harvest their crops: so it is worth their while to build bigger and better houses than the Bushmen do.

The first men who lived in this country were also hunters who wandered through the great forests which covered the river valleys in search of game, berries and roots, indeed anything which could be eaten. These men must have made poor untidy-looking little houses much like the Bushmen do, and for the same reasons. Some, we know, lived in caves because their bones have been found there, together with the broken bones of the animals they had eaten, and the stones which they used as tools and weapons.

So you see that men everywhere, and in all ages, have used in building their houses, the materials which they find in their surroundings.

THINGS TO DO

1 Bring any picture you can of a house in any country. It may be on a postage stamp or on the label of a tin or bottle. Can you say the following things about it:—

(1) Where is it?
(2) What is it built of?
(3) Can you see if the material is found nearby?
(4) Is it made so that it can be moved from place to place? Why?
(5) Is there any special reason why it is shaped like it is? Is the roof flat? Has it a verandah? Is it built on piles? Has it any fly screens? Has it any chimneys?

2 Find out whose houses are called:—igloos, tepees, yurts, chalets, bungalows.

3 Make a table like this:—

Name of it	Who lives in it	Where it is	What it is made of	Drawing of it
igloo	Eskimo (in winter if necessary)	Baffinland	Snow	

SOMETHING TO MAKE

1 Take a piece of stiff paper about 3-in. wide and 7-in. long. Fold both the long sides inwards until they meet. Tuck the ends one inside another to make a "collar" of paper. Take another piece of paper and cut out a circle a little bigger than the collar you have made. Cut half across the circle and push the two edges of the cut one over the other so making a shallow lamp shade shape. Gum the overlapping piece to that below it. Rest the lamp shade over the collar. You now have a model of a Kaffir house which you can paint in the proper colours.

2 Save egg shells, especially the big ends. A little less than half a shell painted white looks like an igloo. Stand several on a thin layer of cotton wool, and if you like, stand that on a mirror so that part of the mirror is uncovered and looks like still water.

You should find one or two of these books in your Junior Library. They are all most interesting, and you would do well to read as many of them as you can.

GENERAL BOOKS

BRUCE, M.	*Book of Craftsmen*	Harrap
CLAXTON, W. J.	*Romance of Progress*	Wells, Gardner, Darton & Co.
MARSHALL, H. B.	*Our Island Story*	Jack
WILLIAMS, A.	*Let Me Explain*	Wells, Gardner, Darton & Co.

BOOKS ABOUT "SOMEWHERE TO LIVE"

COBB, R.	*This way to the Castle!*	Pitman
GAUNT, A.	*Exploring Historic Britain*	Southern Editorial Syndicate
HARDINGHAM, B. E.	*Living in Queer Houses*	Nelson
MOORE, M.	*Maori Picture*	Sylvan Press

BOOKS ABOUT SOMETHING TO WEAR

CLAXTON, W. J.	*Cotton and the Spinner*	Blackie
CLAXTON, W. J.	*Silk and the Silk Worker*	Blackie
FAWCETT, R. (Ed.)	*Where does it Come From? Cotton*	Gawthorn
MAY, C. V.	*The Story of Wool*	Burke Pub. Co.
PETERSHAM, M. & M.	*Story Book of Clothes*	Dent
POWER, R.	*Boys and Girls of History*	Cambridge Univ. Press
RANSHAW, G. S.	*How things are Made*	Burke Pub. Co.
	Rayon, Nylon and Glass Fibres	Whitman
WATSON, E.	*The Story of Textiles*	Harper & Bros.

CHAPTER VII

SOMETHING TO WEAR

THINGS FOR YOU TO FIND OUT

1 Can you say how the weather affects what you wear ?

2 What are your clothes made of? How many different kinds of things do you wear not only now but throughout the year ?

3 Watch your mother darning. How does she do it ?

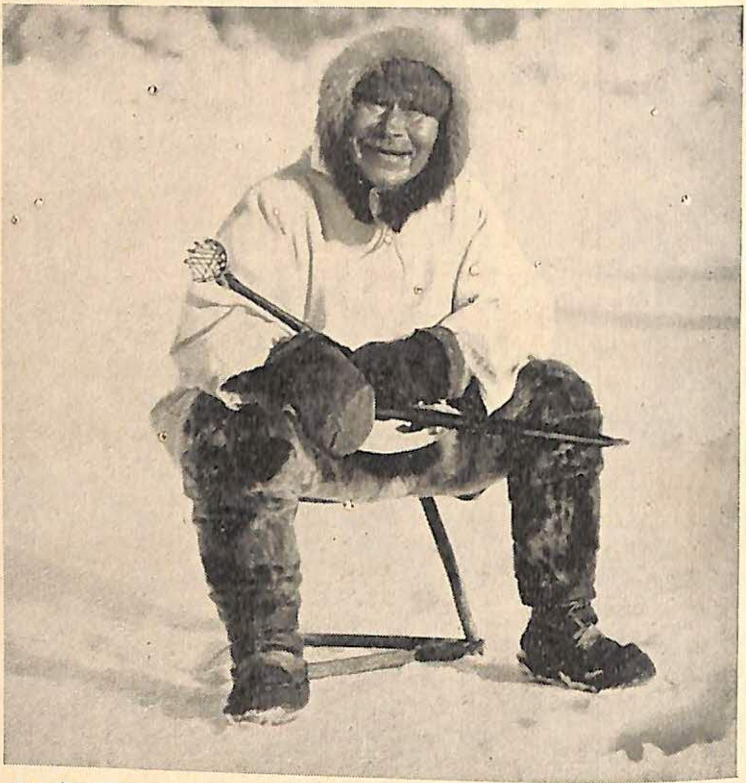
4 An unmarried man is a bachelor, isn't he ? Can you find out what unmarried women in this country are called and why ?

5 Ask your mother to show you some old family photographs. How were women dressed at the time these photographs were taken ? Did the men also dress in a way different from now ?

6 Have you ever seen the Mayor or Lord Mayor of your town dressed in his robes of office ? Can you describe his dress and say why he wears that special one ?

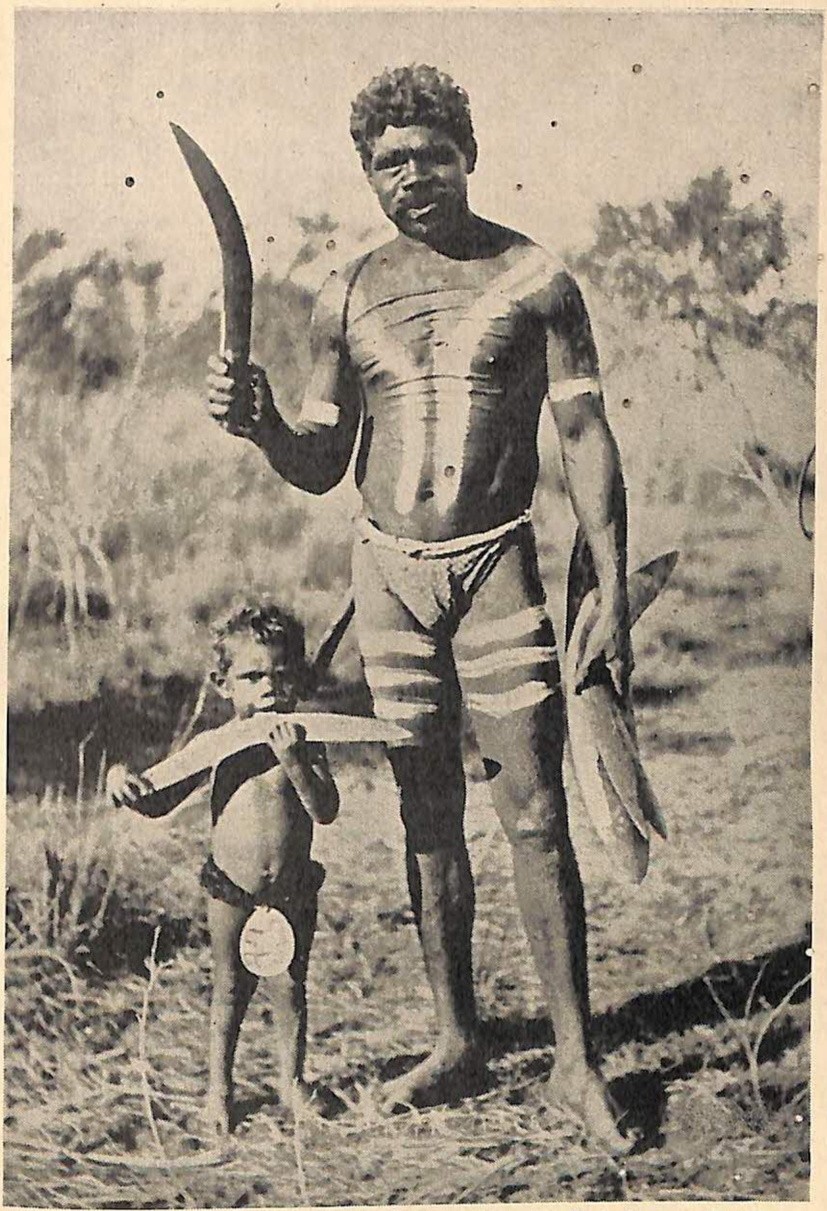
"JOHN, don't go out without your coat." "Mary, put your scarf on before you go to school." You've heard your mother say things like that many a time, haven't you ? You know that she would not tell you to put on your scarf or coat on a hot day. One of the reasons for wearing clothes is to protect us from the weather. In the summer we wear fewer clothes than in winter: in the wet weather we wear mackintoshes, and perhaps rubber boots. In some ways, then, wearing clothes is like having a house. In cold wet weather we need somewhere dry and warm to live. Houses, we have said, are made by many peoples from the things they are able to find in their surroundings: so, too, are clothes. We find people who dress in skins, people who use bark, people who wear grass skirts, and a few people who wear leaves !

The Eskimos, who live north of the Arctic Circle, have no cotton and no wool with which to make clothes: even if they had they would not know how to use them. They are hunters and so have the skins of the animals



14 An Eskimo fishing. How is he dressed? Why? Does the picture give you any clues? Is the sunshine bright? (Compare the dresses shown in Illustrations 13 and 15.)

they catch for food, and these are much the best clothes for them anyway. Some tribes wear the skins of reindeer with the furry side next to their bodies: you and I would probably be tickled to death if we were asked to wear them, wouldn't we? In very cold weather they put on a second suit, but this time with the furry side outward. The outer suit has a hood, something like a pixie hood, fixed to it so that it will fit closely to the head, for as you know very well, ears quickly get cold, and there, where the Eskimos live, the sea freezes over every winter. In such great cold their ears would be quickly frost-bitten and dead if they were not covered over warmly. They



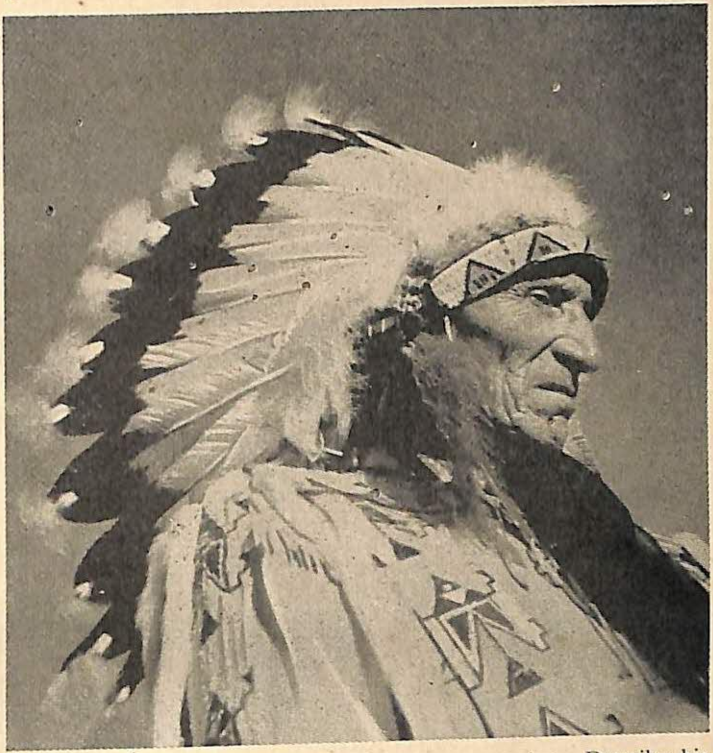
15 An aborigine of Northern Australia teaching his little boy to throw a boomerang. How are they dressed? Compare Illustration 14. Is it a bright sunshiny day? What kind of plants grow here?

make their boots, which are long like Wellingtons, of sealskin because that is waterproof. Inside the boots they wear stockings of deerskin. When they are out of doors they also wear heavy mittens. They would not dare to touch metal with their bare hands in the winter, for if they did the cold would be so great that the moisture in their skins would freeze to it causing blisters like a burn.

Quite the opposite is the Pigmy of the Congo Valley. He, too, is a hunter, and could, if he chose, clothe himself in the skins of the animals he catches for food. He has no need to do this because it is a hot country, hot all day and all night, winter and summer. The men simply wear a strip of bark round their middles, and the women dress in bunches of leaves. It is true, too, of the natives, or blackfellows, of Australia, that, living in a dry hot land they wear next to nothing. They sometimes wear short aprons or loin cloths, like bathing trunks, made of skins sewn together with animal sinews.

These native Australians often paint their bodies in stripes and patterns with different coloured clays, especially red. They do this when they are going to carry out ceremonies of various kinds, just as sometimes even to-day we wear certain kinds of special dresses for special purposes. Many native tribes, for example the Bushmen, even though they are almost naked, are fond of bracelets and necklaces, sometimes because they are pretty, and sometimes because they are supposed to be magical.

The first men who lived in this country were hunters, and dressed in skins. They probably never wore clothes as well made as those of the Eskimo, but they must have worn more than the pigmies or the blackfellows. They sewed skins together, we know, because bone needles have been found in the caves in which they lived, together with the stone scrapers they used for cleaning the skins. They also painted themselves with colours, especially with red.



16 A Sioux Chief dressed for an important occasion. Describe his head-dress. Of what material do you think his shirt is made? How is it decorated? Compare his face with that of the Australian aborigine.

Some hunters who lived in lands where there was more food, and a less severe climate, made patterns and ornaments on their clothes. The Sioux Indians had patterns worked on their deerskin trousers, shirts and moccasins, with dyed porcupine quills like long and beautiful beads.

Men have known how to spin and weave and make cloth from wool or cotton or flax for a very long time. They must have learnt how to tame animals, and how to grow plants for their own use before they learnt to spin and weave. Hunters do not often stop long enough in any place to have the chance to learn about plants and spinning and weaving. Their life is one of continual movement, but farmers in bad weather, or the depth of winter, would perhaps have time enough to try to do things for themselves and one day, not quite realising at first what he had done, a shaggy-haired, clumsy farmer, or herder, wove strips of skin, bark or fibres together. So men stumbled on the way to weave, and moved one step farther from the animals.

THINGS TO DO

1 Draw a table in your books like this and fill in the columns.

People	Clothes		What made of	Why
	Winter	Summer		
Eskimos	Double suits, hoods, long boots	Single suits, long boots	Skins of seal, reindeer and walrus	Because Eskimo is a hunter and because his is a very cold country.

2 Where do people wear, or why are the following named:—Panama hats, turbans, ear muffs, Wellington boots, ostrich feathers, ponchos, sombreros, Astrakhan gloves?

CHAPTER VIII

YOUR CLOTHES

If you take an old piece of cloth which nobody wants, and you begin to pull it to pieces, you will soon discover that it is made of threads. Then if you pull the threads to pieces you will find that they are made of fibres. It does not matter whether the old cloth is made of wool, or cotton or silk, it can always be shredded down into fibres. They might have come from almost anywhere on the earth, from the sheep of New Zealand, from the cotton fields of Alabama, or from the pine forests of Norway or Canada. Yet wherever they come from they have all to undergo two main processes before they can be used to clothe you.

First they had to be spun: that is, they had to undergo a process of "spinning." It is because young women everywhere in this country used to spin that unmarried women to-day are still called spinsters. Have you ever seen a spider spinning? Have you ever seen a top spinning? In the first case it looks as though a thread is being stretched. In the second case the top is twisting round and round very quickly on its point. When we say that fibres are spun we mean both these things: we mean that they are being twisted together and stretched out at the same time. Will you try that with some cotton fibres pulled out from a piece of cotton wool? Remember, twist and stretch at the same time, and you will begin to make strong threads.

The second process is weaving. Have you watched your mother darning? What does she do? First she makes a number of long stitches backwards and forwards across the hole. Then she threads stitches at right angles to these going under one and over the next, and so on, until she gets to the other side. Let us count the first stitches she made across the hole 1, 2, 3, 4 oh! yes, up to 10. She went over 1 and 3 and 5 . . . . and under 2 and 4 and 6, by moving the point of her needle up and down. But if there had been a little man who had caught hold of the threads 1, 3, 5, 7 and 9 and pulled them down, your mother could have pushed her needle straight across over them without dipping the point up and down at all. Then, instead of darning she would have been—yes, weaving.

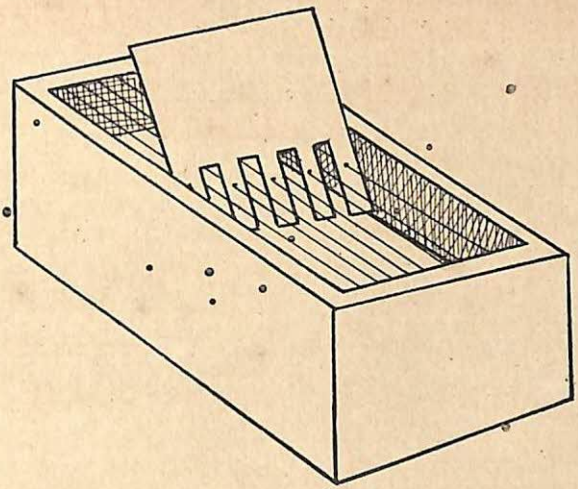
In weaving a shuttle replaces the needle. The first cross threads are called the warp, and the thread carried backwards and forwards by the shuttle is called the woof or weft. The little man's place is taken by a set of wires or strings through which every other thread of the warp is passed: these are called the healds, and pull the threads up and down so that the shuttle can pass backwards and forwards.

So we see that fibres are spun into threads, and the threads are woven into cloth. Hold your sleeves up to the level of your eyes and the window. Do you see the fibres? Look closely at the cloth. Do you see the threads?

SOMETHING TO MAKE

Get an old boot box like the one in the picture. Leaving a rim of about half an inch all the way round cut out the rest of the bottom. This rim strengthens the sides and stops the box from folding up when a strain is put on it. From the piece you have cut out of the bottom make a sort of comb with legs and spaces each a quarter of an inch wide. Thread a needle with a long piece of wool and knot the end of it. Then push the needle and thread through one end of the box just clear of the side rim, through the first leg of the comb and through the opposite end of the box, keeping the thread straight. Then, a quarter of an inch nearer the farther side of the box push the needle back through the end, through the first space in the comb and again through the opposite end of the box. Keep doing this working across the ends, putting one thread through a leg and the next through a space of the comb. Soon you will have made twenty or so long threads such as your mother might make in darning. Fix the last thread so that it will not pull back through the end of the box.

Now pull the comb (or, as you have learnt to call it, the heald) and pass a thread across between the threads held up and those



17

left behind. Coming back in the opposite direction push the heald down and pass a thread between those pushed down and those left behind. You have made a very simple loom.

Boys can make one of these quite easily from pieces of Meccano.

1 Write out the following sentences and fill in the missing words. Fibres of nylon, wool and . . . . . are . . . . . into threads by twisting and . . . . . them. Threads are then . . . . . into cloth on a machine called a . . . . . The shuttle carries the . . . . . across between the . . . . . Alternate threads are pulled up and down by the . . . . .

CHAPTER IX

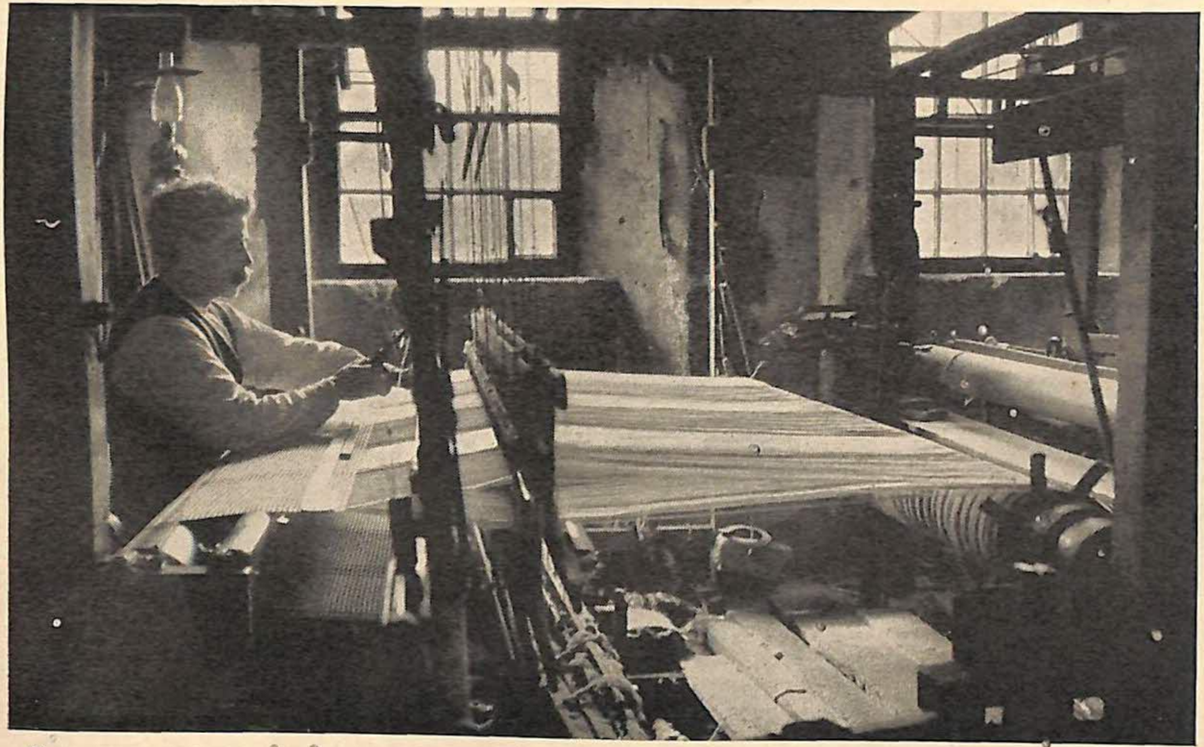
BEFORE THE DAYS OF THE FACTORY

WHERE did you buy your coat? From a draper's or a clothier's or from the clothing department of the Co-op or some big store? Very likely; but did the people who sold it to you make it? No. Making it goes a long way back and if we inquired we should find that now-a-days the cloth came from a factory, first to the tailor who made the coat, and then to the Department Store. Cloth for clothes was not always made in a factory and sold in a Department Store.

Before the days of the factory many people in many different parts of the country used to make cloth from the wool of the sheep pastured nearby. Cotton was never used because it cannot be grown in this country. In those times the farmer clipped his sheep, and his spinster daughters spun it. He, his wife, or a travelling weaver, may have woven the cloth in the farmhouse. As you may guess, there were some people who specialised in these jobs, some, that is, whose main job was spinning and weaving, and who did less farming. More cloth would be made where more wool could be obtained, and certain districts were well known for special kinds of cloths. Serge was made, and is still made, in Gloucestershire and Somersetshire: "worsted" was made in Norfolk. Central Wales made flannel, and the people of the Pennine villages also made much cloth.

In the fifteenth and sixteenth centuries, clothiers, as they were called, bought raw wool, and had it cleaned or scoured, and then sent it to the spinners. The thread or yarn which they got back they handed on to the weavers. They passed the woven cloth on to the dyers and from them the clothier would receive his cloth ready for sale. Do you remember what special words we used to say that work was divided up among a number of workers? Well, this is a very good example of it.

The spinners, the weavers and the dyers all worked

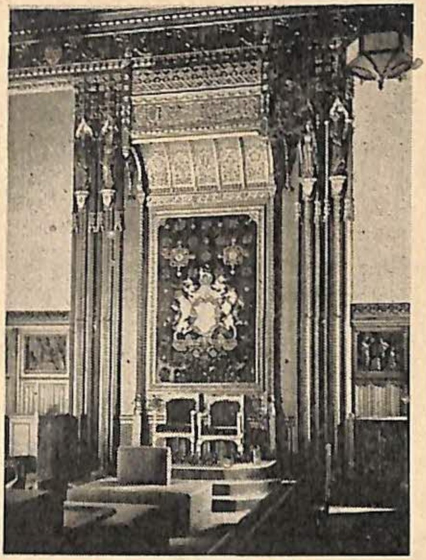


18 An old Scottish weaver of Renfrew. The loom is 150 years old, and is worked by hand and foot power. For hundreds of years before the coming of factories, weavers sat in their own homes at looms like this one. Notice the oil lamp. Can you pick out the parts of the loom? Would you like to have worked long hours in a room like this? Compare Illus. 21.

in their own homes, not in great factories, and we should speak of these men and women as domestic workers, and the system on which they worked in their own homes as the domestic system. It was usual for all trades to be carried on in the homes of master workmen until the time when the power of running water or steam began to be used to drive machines. Then it became necessary to have many people working together in one large building near to the supply of power.

Do you remember the words of the old English song—"Sally"? It starts—"Of all the girls that are so sweet" and goes on to say "And when my seven long years are o'er, Why then I'll marry Sally." Another line is—"My master and the neighbours all!" It is a pretty song which an apprentice is supposed to have sung. He would be apprenticed to his master for seven long years, and during that time he would live in the house with the family of the master, learning the trade. The weaver's family also helped their father in his work, for boys and girls rarely went to school in those days. They stood by their parents and learned from them. Father would say "Hand me another shuttle, lad," or mother would say "Come on, our Mary, let's see you take a hand at this spinning." The boys learned how to farm, too, because there was always a close link between farming and weaving. The girls must have learned how to make butter and cheese and how to feed the poultry, and make pastry and sew clothes, too. The important thing to remember is that mother was close at hand to see the boys and girls were fed and looked after. We shall see that when people began to work in factories, the boys and girls (even when they were very young) often had to be left to look after themselves because their mothers and fathers went out to work.

From the early sixteenth century, England has been famous all the world over for its woollen cloths. It was a trade which the government looked after most carefully, because by selling some of the cloth to the coun-



19 The House of Lords now sits in what used to be the Robing Room of the King and Queen, because the House of Commons has the Lords' building. Here you see the thrones and the coat of arms—the Lion and the Unicorn. (Do you know a rhyme about this?) In front of the throne is the Woolsack, like a very large cushion with a smaller one standing edgewise on it.

tries overseas we earned money with which to buy what they had to sell us. No country has within itself everything it needs, nor can it grow everything: it must get many things by trade with other countries.

The wool trade was so important that it was considered to be the foundation of England's prosperity, and to mark this fact, even to-day, the Lord Chancellor, the chief lawyer of the land and most important person in the House of Lords, sits upon the "Woolsack," a large square cushion of wool covered with red cloth.

CHAPTER X

THE FACTORY SYSTEM

FOR many centuries, then, wool continued to be woven on looms worked by hand and foot power. The shuttle was thrown across the loom by hand, and the healds were raised and lowered by means of pedals. This does not mean that no improvements in the loom had ever been made: if you work long enough at any machine you are likely to find out ways of making it work better. Spinning, too, was still done by hand on the sort of simple machine (which you may have seen in the windows of antique shops) called the spinning wheel: the wheel was turned by a treadle.

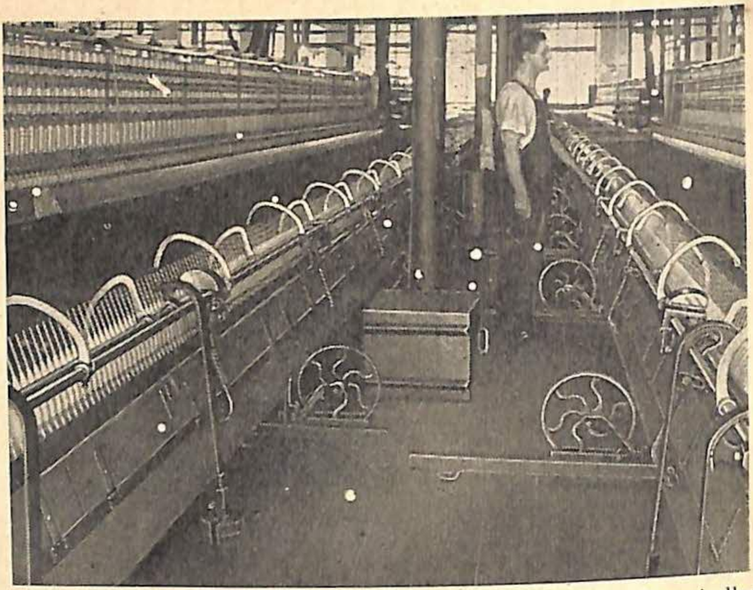
The inventing of new machines which began early in the eighteenth century, and the use, first of water, then of steam power, caused what is called the " Industrial Revolution " because gradually, over a number of years, spinners and weavers went to mind machines in factories instead of working for themselves in their own homes. The "domestic system," that is, gave way to the "factory system." It led to an enormous speeding up in the making of all sorts of things, but especially of textiles—cotton and wool. Because of it Britain became the foremost industrial nation in the world. Yet, as we shall see, it also had its gloomy side. The speeding up of output was only made possible at the cost of great suffering for the children and ill-health and tiredness for all workers.

In 1733 the first of the new devices was invented. A man named John Kay, who lived near Bury in Lancashire, patented the "flying shuttle." By means of it, the shuttle was thrown mechanically, carrying the weft from side to side between the threads of the warp. This more than doubled the speed at which the weaver could work. More yarn was needed from the spinners to keep pace with them, but this could not easily be done because it took six spinners to spin enough yarn to keep one weaver busy. So, because of Kay's invention, a weaver would often have to start his day's work by walking round the houses of spinners to collect yarn with which to weave.

You will all have heard the saying—"Necessity is the mother of invention." Do you suppose it has anything to do with this case? Yes, it means that because Kay's shuttle helped them to weave twice as quickly men would now begin looking for some way of speeding up spinning so that the weavers would not be held up for yarn. Strangely enough, the first spinning invention was made by a weaver, James Hargreaves, who lived in Blackburn, Lancashire. It is said that he accidentally knocked over the spinning wheel he was using, and the wheel went on turning, twisting the thread through his hand, and that this gave him the idea for the machine he made. It was called a Jenny—after his wife—and would stretch and twist eight threads at the same time. Later it was found that the machine would spin more than eight, and that children could work it! We have seen how some of these children lived in stinking, airless slum buildings near the factories. Many of them went to work in the spinning mills.

20 Richard Arkwright.

Richard Arkwright was born at Preston, and later lived at Bolton in Lancashire. He invented a completely new way of stretching the threads in spinning. He passed them between two rollers, one of which turned more quickly than the other. His machine worked by water power and so was known as the "water frame." Arkwright made a great fortune as a mill owner, and



21 Mule Spinning. Those parts of the machines which carry the spindles run back on the iron wheels. As they run back the spindles are locked and the threads are stretched. When they run forward again away from the man in the picture, the spindles turn and reel up the stretched threads. The man minds the machine and pieces up any threads which may break.

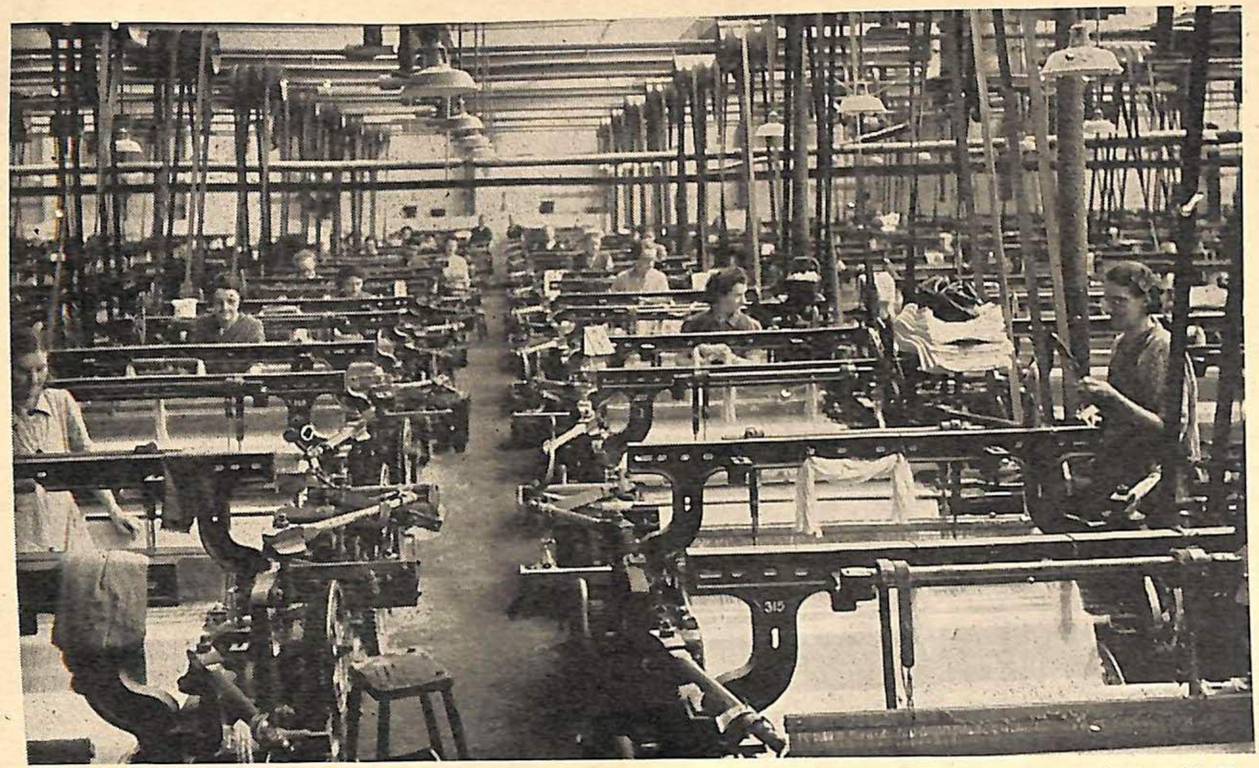
was later knighted, becoming Sir Richard Arkwright.

The mule is a cross-bred animal between a donkey and a horse. The spinning "mule" was a cross-bred machine between Hargreave's Jenny and Arkwright's water frame. It was invented by Samuel Crompton, who was born near Bolton, and later lived in Bolton itself. These inventions were all made, as you must have noticed, in Lancashire which is famous for its cotton; and it is true that they were first used in making cotton, which was brought into Lancashire for the first time soon after 1700. The inventions were used much later on in making woollens.

It is important to notice that all of the machines could be worked by power, which meant in the first place, water power. Factories, dark, ill-ventilated, and cramped, grew up along the sides of the small streams which run swiftly eastwards from the Pennines in the West Riding of Yorkshire. Will you find out where this is on your atlas map? As time went on, coal for the new steam engines, improved by James Watt, was also found here, and helped to make the industry grow swiftly. The older wool-making districts became less and less important, while, on the other side of the Pennines, in Lancashire, the young cotton industry grew so fast that wool was no longer made there at all. Lancashire, too, had water power and coal. It had also a great port, Liverpool, through which cotton from the U.S.A. could be brought.

The time arrived when the loom had to be improved to keep pace with the spinners. A clergyman, Edmund Cartwright, went to visit Richard Arkwright's mill, and after seeing the work, said that he could make a loom which would work by power. His first power loom was a very clumsy one but it was the forerunner of many wonderful kinds down to the modern looms. Some of these change shuttles automatically as soon as the thread is used up in the one which is being thrown backwards and forwards across the warp.

Machines, then, began to take over the work of men's hands. They have been doing so ever since, so that to-day nearly all the things which we use are made on machines—clever machines which may only need a few people to look at them every now and again to see that they are working correctly. Nowadays men and women often do not see the completed article which they are helping to make, and so they may be bored with and uninterested in their work. Because of the use of machines, jobs have been more and more split up amongst a greater number of people who only do one small thing all day long. Because they only do a part of the work they can never feel the same sort of happiness as you do when you have finished something all by yourself. They know very little about the work of the many other people who help to make the finished clothes



22 A weaving shed. Notice the way in which the machines are driven. Can you pick out the parts of the loom? The stick— called a picking stick—and its leather loop knock the shuttle across the warp. You can see the healds, too. What kind of lighting is in use? (Compare Illustration 17.)

you are wearing. Often they do not know where the wool they spin, or weave, comes from, nor care where it goes. That seems a pity because it comes half way round the world on such a long but interesting journey—all the way from the Australian farmer. Think of the hundreds of people who have worked to bring it from him to clothe you!

THINGS FOR YOU TO DO

1 Rewrite the following and put in the missing words.
In the . . . . . system the workers worked in their own homes: in the . . . . . system they worked in . . . . . where machines were driven by . . . . . and later by . . . . . power.

2 Are there any old mills in your district which once used water power. Do any work by water power to-day?

3 Arrange these processes in their correct order:—dyeing, shearing, spinning, scouring, weaving, finishing.

4 Make a table like the following one of the men whose inventions led to the growth of the Factory System.

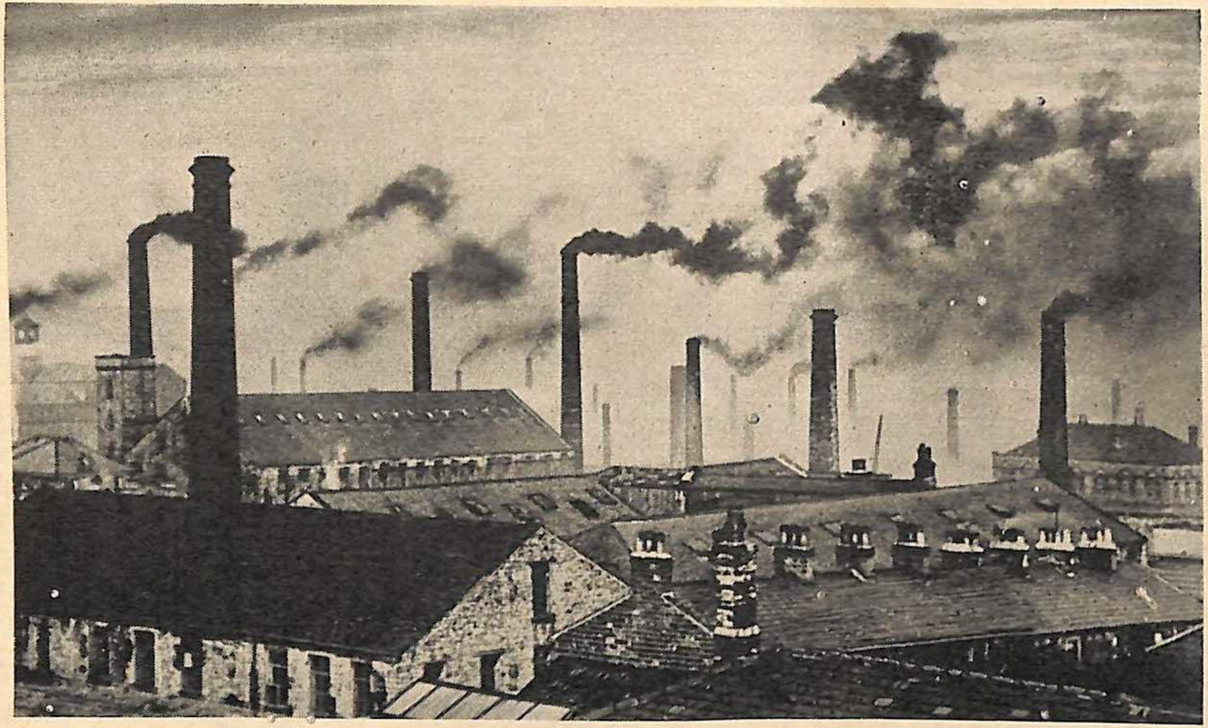
Date	Name of Inventor: Place where Invention made	Description of Invention	Causing speeding up of
1733	John Kay, Bury, Lancs.	" Flying Shuttle"	weaving

CHAPTER XI

THE CRY OF THE CHILDREN

THE machines made possible a very great increase in the quantity of goods turned out by the factories but only at a tremendous cost in lives and health and happiness. We have seen what the houses and homes of these early industrial workers were like: later we shall learn how poorly fed they were. The towns in which they were crowded were without proper sewerage: there was no proper water supply. Hundreds of thousands of people died in epidemics: hundreds of thousands suffered ill-health brought on by their condition of living: hundreds of thousands of children grew up twisted and warped in mind and body by lack of care and food, and by the kind of work they were expected to do in the factories. Employers and quite kindly people throughout the country were blind to this state of affairs. It was thought that everybody, man, woman or child, was equally able to look after himself or herself. This, as we have known for a very long time, is a most foolish thought and to-day your father and mine, as workmen, are carefully guarded by many laws.

In the early days of the Industrial Revolution it was the law that orphans and poor children should be fed, housed and taught a trade, and the cost of caring for them was to be paid by the parish in which they lived. If the person who was put in charge of them had looked after them as he would have done his own children then it would have been a very good system, but that did not happen very often. During the long wars with Napoleon, many thousands of fathers were killed in our armies and at sea. Mill owners in the north of our country could use children as workers, and so those who were supposed to look after the many orphans and poor children found an easy way of getting rid of them and of saving money for the people of the parish. The children were, in fact, sold off almost like slaves. The mill owners



23 A Lancashire cotton town, a photograph taken on a bad day. How many chimney stacks can you count? The row of small chimneys on the right of the picture belong to a row of houses. How would you like to try to keep your house clean in that smoke? What is the factory nearest to the camera built of? (Compare Illustration 11.)

wanted from them as much work as they could get for the smallest possible amount of money spent on food, clothing and shelter.

Their day's work was very, very long. "Children under ten years of age, often only six or even four or five years' old, had to work twelve, sixteen, seventeen, even eighteen hours a day. If the supply of water happened to fail, or something went wrong with the steam engine, the employer made up afterwards for the lost time."*

The overseers of the workhouses in which the children were kept said that they had to lock them up at night to stop them from running away. When the long working day was over at last, the overseers often had to go round the mills to collect these children who had fallen asleep in corners, too tired to move. Sometimes they would fall asleep at their work and injure themselves in the machines which in those days were not guarded as they must be most carefully to-day.

Looking back you would find it difficult to believe that small, underfed children could stand such an amount of work. In one case where they had to follow a machine for spinning which ran out to stretch threads, and back again to wind them up, a child must have walked on the longest days something like thirty-five miles. I'm quite sure you wouldn't want to do that, would you? No: nor would I! Usually they were very poorly fed: porridge and bread and boiled potatoes would be almost all they got, and often the wheels would not stop turning while the food was eaten. The food which they ate in the factory where they worked was badly cooked, and a short while after being put out was covered with bits of cotton or wool and dust. Because of lack of food and sleep they were undersized, and quite often deformed. For this work they might in a week earn three or four shillings.

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* Elie Halévy: *A History of the English People in 1815*
Vol 2, Pelican Edition, p. 108
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The first person to make a stand against these evils was Robert Owen, who was the owner of large cotton mills in New Lanark, Scotland. He believed that happy workers, well cared for and housed, would be better workers; so he built cottages for them, and made the mills healthier places in which to work. He brought down the hours of work to ten a day for all, and would never employ children who were under ten years of age. He was able to show other mill owners round about that he got a good return for his outlay on improvements. In 1819 he persuaded the government that conditions in the factories ought to be carefully looked into, and as the outcome of this enquiry, Parliament passed an Act in that same year, but it was not until fourteen years later that the first important Factory Act came into force.

In 1832 another enquiry was being made and as, at the same time, the question whether slavery should be done away with in the British Empire was being very much talked about, it was perhaps natural that the condition of the slaves should be compared with the life of a factory child. Here is what one person said :—

"On one occasion I was in the company of a West India slave master and three Bradford spinners, they brought the two systems into fair comparison, and the spinners were obliged to be silent when the slave owner said 'Well, I have always thought myself disgraced by being the owner of black slaves, but we never, in the West Indies, thought it was possible for any human being to be so cruel as to require a child of nine years old to work twelve hours and a half a day; and that you acknowledge is your regular practice.'"

Once more a Bill was brought before Parliament as the outcome of the enquiry, and this time with greater success. The man who was responsible for it was Lord Ashley, later the Earl of Shaftesbury. (*See* p. 64.) While he was still a boy at Harrow school he had decided to give his life to the improving of conditions in the towns, and for the workers. 'Ashley's Act' of 1833 prohibited the employment of children under nine years of age and *children between nine and thirteen were not to work more than nine hours a day, and were to spend two hours at school: those between thirteen and sixteen were not to work more than twelve hours a day.*

24 Lord Ashley, the Earl of Shaftesbury.

I expect you start school at nine in the morning, don't you? You have a quarter of an hour's playtime, and a third of a pint of milk about half-past ten. You have lunch at twelve. You begin school again at half-past one or two o'clock, and you finish for the day between four and half-past four. Some of you have jobs to do as well as that, but you don't go to school on Saturday and Sunday; so how many hours a week do you do, not at work, but in school? Something less than thirty, I expect. Yet, not much more than one hundred years ago, people of your age were allowed to work in cotton and woollen mills—and certainly often did—as much as forty-eight hours a week; which is perhaps about as long as is worked by your father and mine now.

Perhaps you will have noticed that Ashley's Act deal only with *textile* factories. Other factories where children might work still went on in the same old way. The case for those children was also put by Ashley as well as by two poets—Thomas Hood and Elizabeth Browning. An act passed in 1844 stopped children below nine years of age from working in any factory: those between nine and thirteen were to work not more than six and a half hours a day, and those between thirteen and eighteen not more than thirteen hours a day, including an hour and a half for meals. This act, also made it compulsory to guard the worker against injury by machinery: the employers were made to put guards, framework and other devices over dangerous moving parts.

In the course of the nineteenth and twentieth centuries conditions have been further and further improved. The age limit for the employment of children was fixed at eleven years in 1891: at twelve years in 1899, until in 1946 it was raised to fifteen, and will, within a few years, probably be raised to sixteen. At the same time laws have been passed dealing with health conditions in the factories, with ventilation, with the supply of wash places and so on. Now, too, workers who are injured through the carelessness of managers or by worn machinery are protected by the law, and can claim money for damage done to them. You now have free schools, free milk, and free dinners, and a doctor and dentist come round every now and again to see that you are well. You're lucky, aren't you—or don't you like it?

THINGS FOR YOU TO DO

1 Do you think that your life is a happier one than that of a boy or girl your age one hundred years ago? If you can, write down three ways in which it is and three ways in which it is not pleasanter.

2 Divide a page into two. On the left side write a time-table for one of your schooldays. On the right side write a time-table for a boy or girl of your age before Ashley's Act was passed.

In 1843, Elizabeth Browning, the wife of Robert Browning, whose poems "How they brought the good news from Ghent to Aix," and "The Pied Piper of Hamelin," are very likely in your poetry books, wrote "The Cry of the Children." It is a very long poem, but you may be interested to read just two verses from it: they may give you some idea of how she felt for factory children at this time:—

Elizabeth Barrett Browning's

THE CRY OF THE CHILDREN

Verse VI

"For oh," say the children, "we are weary,
And we cannot run or leap—
If we cared for any meadows, it were merely
To drop down in them and sleep.
Our knees tremble sorely in the stooping—
We fall upon our faces, trying to go;
And underneath our heavy eyelids drooping,
The reddest flower would look as pale as snow.
For all day we drag our burden tiring,
Through the coal-dark underground—
Or, all day, we drive the wheels of iron
In the factories, round and round.

Verse VII

"For, all day, the wheels are droning, turning
Their wind comes in our faces—
Till our hearts turn—our head with pulses burning,
And the walls turn in their places—
Turns the sky in the high window blank and reeling—
Turns the long light that droppeth down the wall—
Turn the black flies that crawl along the ceiling
All are turning, all the day, and we with all—
And, all day, the iron wheels are droning;
And sometimes we could pray,
'O ye wheels' (breaking out in a mad moaning)
'Stop! be silent for to-day!'"

August, 184

CHAPTER XII

AN AUSTRALIAN SHEEP STATION

SOME of you will have uncles, aunts and cousins, who live in Australia. Here is a letter from an Australian boy, Frank, to his English cousin who lives in Bradford, in Yorkshire.

THE HOMESTEAD,
WOOLWOOLENA,
February 23rd, 1948.

Dear Bill,

Thank you for you letter, and for the English stamps. Our teacher read your letter out to all of us because he said we ought to know more about our cousins in England. Wouldn't it be fun if your teacher read mine out to your class!

Well, first then, to answer your questions; we don't have the sort of fields you are asking about. Instead we have paddocks with wire fences running all round them. I can tell you it is some job keeping them repaired. The men who do this are called boundary riders, because they have so far to go they ride on horse back, and carry clippers and wire with them to mend fences with. They tell my dad when the sheep in one paddock have eaten off most of the dry grass and salt bush. Then the sheep are moved to another paddock which has not been used for some time.

We don't call ours a farm. Really it's a 'Station.' Our house is only one storey high, and has a verandah all round it to keep the sun off the rooms inside, because here we never have winters such as you say yours are—nor summers either for that matter. We don't generally get much rain at all. In fact, from my window now I can see the old wind pump blowing round in the breeze. We have to pump water all the time, and we collect as much as we can in the 'tank,' that is, in the pond which my Dad made when he first came here by building a dam across the stream. Phew! it's hot to-day. Dad says it's 95°F. in the sun. Near the house is a flower garden, a kitchen garden, and an orchard where Jean and I built a hut last autumn. You should have seen it. Mom said it was much better than the blackfellows make for themselves. Anyway, Dad asked Ben—he's our blackboy (Dad says he's the best tracker anywhere around) to make me a boomerang, and he did. I was getting on fine with it: then Jean went and threw it the wrong way and we lost it in the mud by the tank.

Sometimes Dad lets Jean and me go off on our ponies with one of the station workers. You can go for miles here without seeing anybody, without crossing a road, or without seeing a railway. All you hear is the baa-ing of the sheep, and sometimes a dog barking: but often, if you stop talking or singing, all you listen to is your saddle creaking, and the pony's hooves on the dry ground. But it's all right, Bill: you'd like it a lot if you ever came here.

Tell Margaret to write to us sometime, will you? Mom and Dad send their love to all of you, and say will I ask Uncle Dave and Aunt Polly to drop them a line sometime. I'm enclosing some of the latest Aussie stamps, and hope you will like them. So long, for now.

Your loving cousin,
Frank.

Frank's letter tells you just a little bit about his home, but there is much more we should be able to find out about it.

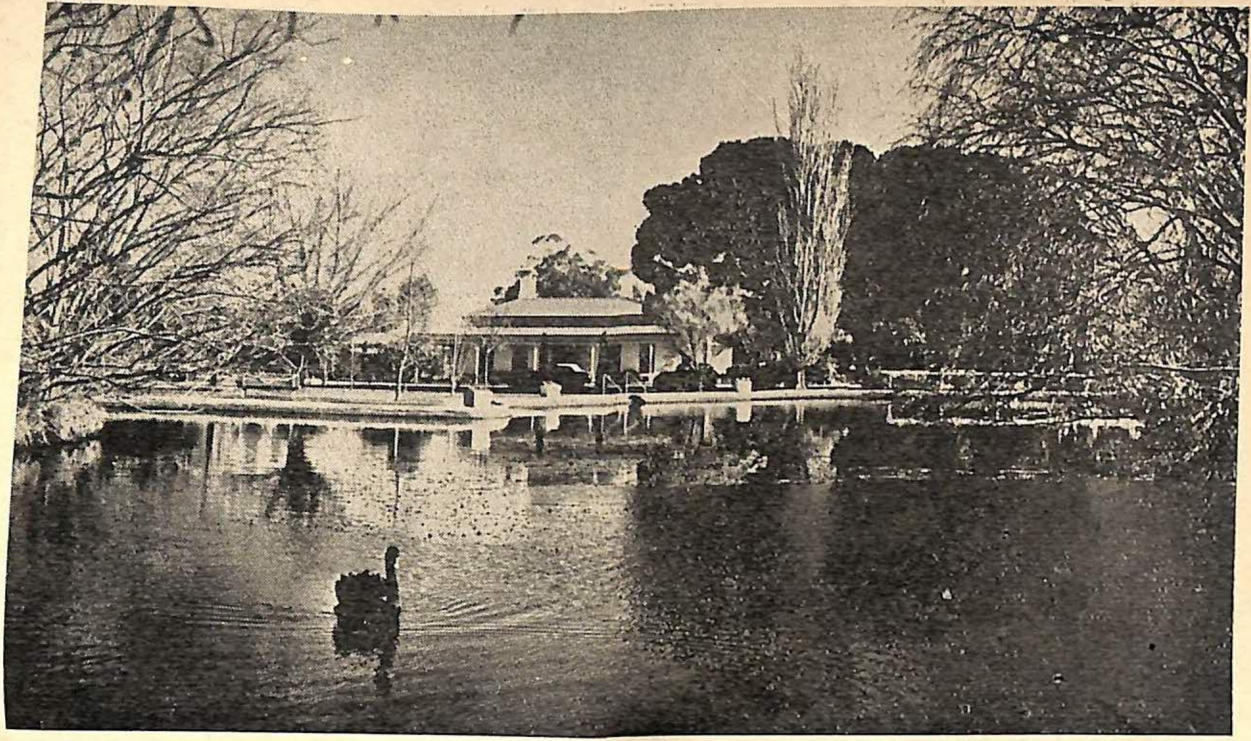
THINGS FOR YOU TO DO

1 Have you any "Aussie stamps" as Frank calls them in his letter? What do they show on them?

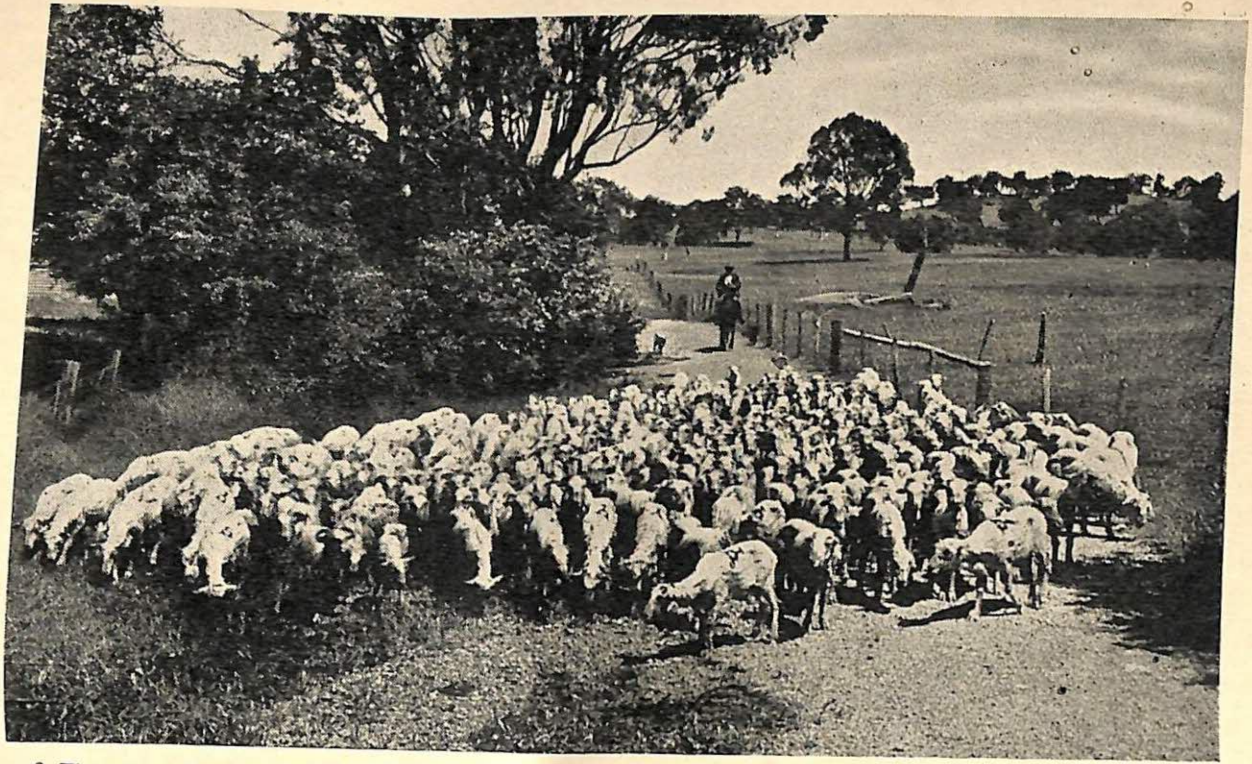
2 Make a drawing of Frank's house. Turn back to page 39. Try to answer these questions about Frank's house.

3 Have you any relatives in Australia? Can you bring to school any pictures of them or magazines they have sent you?

4 Make a list of words in Frank's letter which are not often used in England such as—boundary riders, salt bush, paddock. Against each word write down what it means.



25 A sheep station in New South Wales. This station is 60 square miles in area—that is, nearly 8 miles square. Can you think of a journey of 8 miles from your home? Notice that the bungalow has a verandah and two chimneys. There are two cars standing in front of the door. What colour is the swan swimming on the pond?



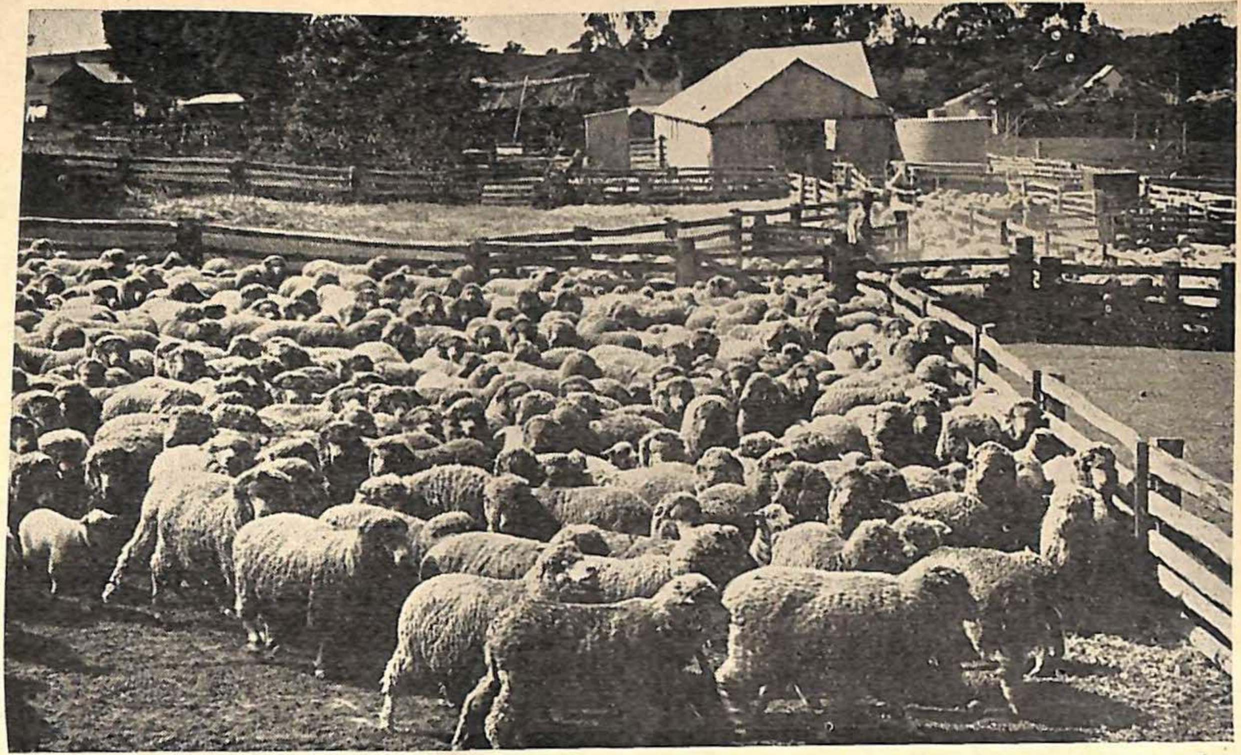
26 These Australian sheep have just been sheared. Do you see the mark on their backs? What is it for? What do you call the man on horseback? Notice that there are wire fences but no hedges. Is the sunlight strong? Is the sun high in the sky?

CHAPTER XIII

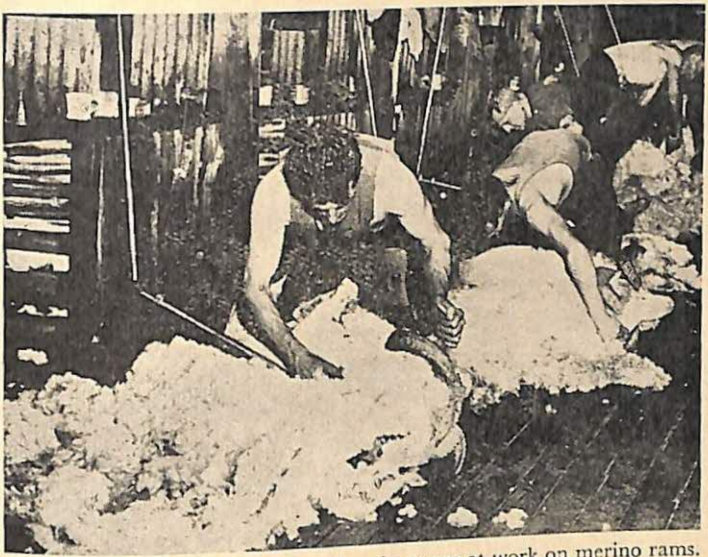
MORE ABOUT A SHEEP STATION

AUSTRALIA is a large continent nearly three million square miles in area—that is nearly twenty-five times bigger than these British Isles in which we live. I went by train from Perth in Western Australia to Sydney in New South Wales: will you find out where these places are on your atlas map? Altogether it took me a week to do the distance of nearly 2,000 miles. Much of my journey, as you will see if you follow it on the atlas, was across a great desert where very few plants will grow. Where the railway crosses Western and part of South Australia there is a low woody bush with tight little leaves like thyme or heather. Over much of the area there are no bushes taller than this, nowhere a tree, nowhere a gleaming blade of grass. In 1,000 miles the railway crosses no river which has water in it all the time. Gradually the desert gives way to thin grasslands, and in the great plain of the River Murray-Darling there are fine sheep pastures. Altogether in Australia there are reckoned to be about 120 million sheep. There are six million people living in the country: how many sheep would each one have if the flocks were evenly divided?

Many of the sheep are of a breed which we do not often see in this country, called merino. They are a Spanish breed which was taken first to South Africa, in many parts another dry country. It was from there that they were carried by a trading ship to Australia in 1796. The merino is a breed famous for its long fine wool. It would not have been any good taking mutton sheep to Australia except to feed the people there, for in those days there were no fast steamers with special refrigerator holds to carry meat back to the thickly peopled countries of Western Europe. Wool, however, was a good thing to send partly because it began to be very much wanted by the new factories, and partly because it would never go rotten on the voyage.



27 Shearing time on an Australian sheep station. These sheep have been penned up before shearing. They are merino sheep. Can you tell if the weather has been dry? Why is there a corrugated iron tank outside the shearing shed?



28 Here are four of the travelling shearing team at work on merino rams. The shearer nearest to the camera is holding one of the ram's horns in his left hand. In his right hand he holds the shears which are driven by the rods seen in the picture. Soon the rams will be driven out of the shed through the little doorways behind the shearers.

The fleece, the woollen coat of the merino sheep, is very heavy: it may weigh as much as nine pounds. The sheep are sheared once a year by bands of shearers who travel from station to station in the spring time. It is done then because the sheep do not need their fleeces in the hot summers.

One of the main buildings of the station is a long, low one of wood with a roof of corrugated iron like that of all the other buildings. The station workers "muster" the sheep—that is, they gather them together from the different distant paddocks and drive them in great flocks towards the pens near the shearing shed. You can imagine the noise they make. The sheep baa and their little hard hooves rattle on the ground; the dogs bark; a horse whinnies; men shout to each other, and whistle to their dogs and to the sheep. Dust rises in a cloud into the bright sunshine and the smell of sheep is everywhere.

The sun burns down on to the iron roofs, and inside the shearing shed it is hot already although it is very early in the morning. Sheep are driven in to each shearer one at a time through little hatches in the side of the shed. The shearers, who work in a long line, grab the sheep and throw them on to their backs, holding them struggling and kicking between their knees. Each shearer has a clipper something like those used by a barber only larger. The shearers are so practised that they work very fast, and in a couple of minutes each poor, shivering, bewildered sheep is driven out of the shed looking much smaller, for its nine pound fleece lies on the shed floor.

The fleeces are collected and sorted into grades. They are made up into bales—the sort of bales you would see everywhere piled up on lorries in the West Riding of Yorkshire. Before they arrive at the mills in this country, however, the bales have to be taken to the railway depot station in Australia. This might be forty or fifty, or even one hundred miles from the sheep station, because Australia is a big country with very big sheep stations, often of thousands of acres; but there are few railways to serve them. The bales are piled on to huge wagons which may take a team of fifteen or sixteen horses to haul each of them over the rough roads. The bales journey to the ports by rail, and are lifted by huge cranes into the holds of the ships. Then the 13,000 mile journey to London, Liverpool or Hull begins. It may take two or two and a half months to bring the cargo across the burning Indian Ocean, through the Suez Canal, and the Mediterranean Sea to the grey Atlantic and the stormy Channel. Another route is just as quick; look at a globe and you will soon see which it is.

This is where and how your coat began. Once it would have been made by you from the fleeces of sheep from your own farm. Nowadays the wool travels half way round the earth and hundreds of people have helped to make it up into your coat. They have all had to be paid for the work they did from the money your father or mother gave to the shopkeeper. How could that be do you suppose?

THINGS FOR YOU TO DO

1 Rewrite the following and put in the missing words:—

Many Australian sheep are of the . . . . . breed which is famous for producing heavy . . . . . These may weigh as much as . . . . . each. Sheep are . . . . . in the spring by . . . . . bands of shearers. After the fleeces have been . . . . . they are made up into . . . . . These are carried to the . . . . . stations and then to the . . . . . where they are loaded into ships which bring the wool . . . . . miles to our country.

2 Each of these jumbled words has the same two letters missing. Can you find out what the words are? They all have something to do with wool.

CEEF, AB, NOOLW, BEMROUN

3 Draw a rectangle 2½-in. by ¼-in. Divide it into ten equal parts. Colour the first four of these. The coloured part stands for the amount of wool which comes from Australia; the whole stands for all the wool coming into this country.

CHAPTER XIV

HOW AND WHERE WOOL IS MANUFACTURED

You look down from the high Pennine moors where the cotton grass and the bracken are always bent by the breeze, down into one of the many steep-sided valleys cut by the streams which flow eastward finding their way to the Humber and the North Sea. Near a stream, right in the valley bottom, you see a number of three or four storied stone buildings each with a tall chimney, sometimes with the name of the mill written down it in large white letters. On the valley sides cluster rows of stone houses, many of which now look small and worn, for they have stood against the cold winters, the snow, frost and rain, and the sooty atmosphere, for the last seventy or eighty years. Here runs the main road, often cobbled on the hills, where horses once snorted and strained to bring up the carts heavy with bales of wool. Buses and a continual stream of lorries now run along it. The railway also follows the valley, sometimes crossing it on a long stone viaduct, or burrowing suddenly through a hill in a short tunnel.

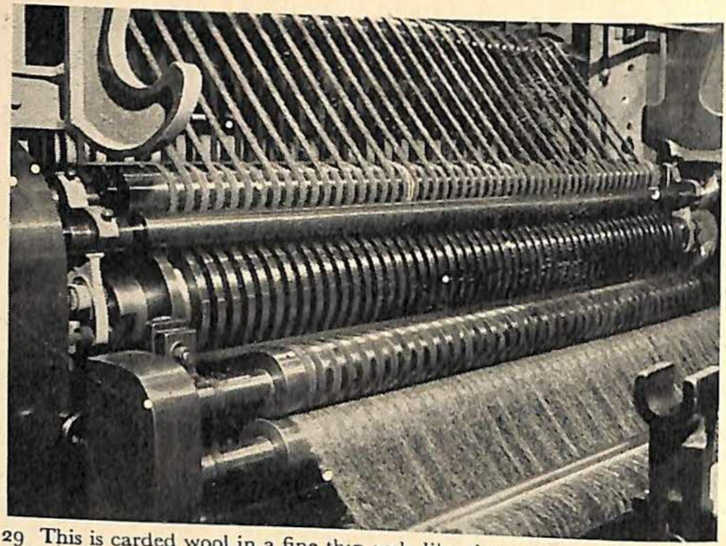
Here in these mills most of our woollens are made to-day. At first smaller mills used the power of the stream, but this was never very satisfactory. Can you guess why? Then coal was found nearby, and the Yorkshire coalfield, of which this is only a part, produces more coal than any other in Britain. The first factories probably used the wool of the sheep which grazed the hills and the moors of the Pennines. To-day, as we have seen, most of the wool is brought in (or "imported") from Australia, though some also comes from South Africa and New Zealand. Let us follow a bale of this wool through the factory gates, and see how it is made into cloth.

First the bale is broken open, and the wool is sorted, for it grows longer and stronger on some parts of the sheep's body than on others. Short wool is made into woollens, but long wool is made into worsteds. Worsted, by the way, is the name of a village in Norfolk where this particular cloth was made in specially large quantities before the wheels of the West Riding mills began to turn. Worsteds are smoother and firmer, while woollens are rougher and fuzzier. The girls will know the difference quite well. Men's grey trousers are often worsteds. Flannel is a good example of a woollen.

The wool, now graded, is scoured to get the grease out of it. Wool is naturally greasy like your own hair. It is interesting to know that so much wool is dealt with here that the grease is worth collecting, as it makes up into grease for machines, and various kinds of ointments. Such a material is called a by-product because the industry would still go on even if all the grease had to be wasted. To get the valuable by-product is one of the reasons why mills of the same kind are often found together. The soft water which flows from the sandstone covering most of the Pennines in this part of Yorkshire is a great aid to washing or scouring the wool. Soft water needs less soap than hard water to make it lather, and so is much less wasteful.

The wool is next "carded," that is, it is combed so that all the fibres lie in the same direction. Then it is ready for spinning. The first machine merely makes the wool into a long loose roll about as thick as a sausage. This is taken away and dyed, and this is another reason why the pure soft water of the streams is prized, because it does not interfere with the colouring as hard water, with other chemicals in it, would do. The soft coloured roll goes back to be spun again, to be twisted and stretched until it becomes thin and strong and able to stand up to the strain of being woven.

In the weaving sheds you can scarcely hear yourself speak for the noise the looms make. If you go close up to this girl, who is a weaver, and shout very loudly into her ear, she may hear you and tell you that it is her job



29 This is carded wool in a fine thin web like tissue paper. It is being split up into narrow ribbons on the tapes you see here.

to look after four looms, to change the shuttles each time the threads run out. She may stop one of her looms for you to see how it works. Then she will reach up and pull a lever which will start the shuttle going again endlessly across the warp. All the noise is made by the mechanism which knocks the shuttle backwards and forwards 180 times in a minute. Multiply this by, say, 200 looms all working in the same shed.

You will be glad to leave the noisy sheds for the quieter part of the factory where the woven cloth is carefully looked over for faults. Girls repair any damaged pieces. The wool, as cloth, is ready at last to go out again into the world. Some of it you buy, but much more of it goes to U.S.A. where our fine cloth, with all the skill of hundreds of years behind its making, will fetch high prices. Some of it goes back to Australia, some to New Zealand, and some to South Africa, the places where it came from in great, greasy bales two years earlier.

THINGS FOR YOU TO DO

1 Draw arrows and write words to show the various ways in which wool is treated from the time it comes into the factory until it goes out. This will help you:—

BALE ⟶ SPLIT OPEN ⟶ GRADED

2 Is water used by any factories in your area for any of the work they do—such as washing wool or dyeing?

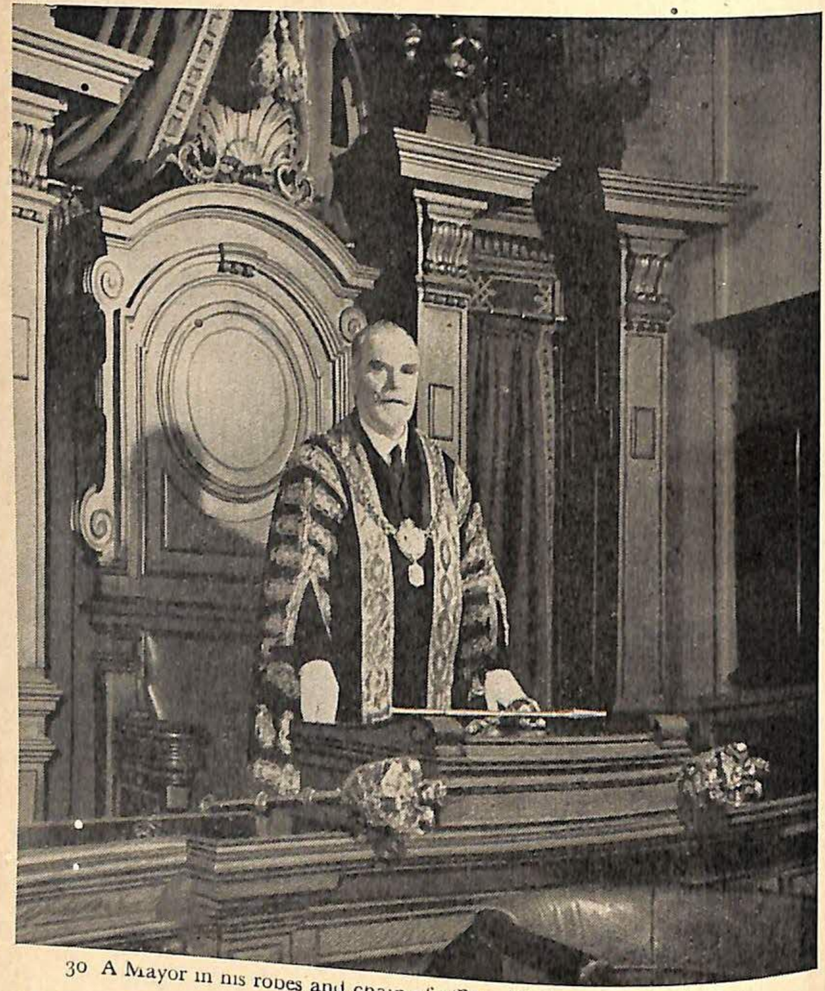
3 Would you like to work in a woollen mill? Why or why not?

4 These sentences have been split. Put their halves together and write them down.

(1) Carding means laying	(1) cloth on a loom.
(2) Dyeing means	(2) colouring the yarn.
(3) Spinning is the process for	(3) twisting and pulling the fibres.
(4) Threads are woven into	(4) the fibres all in the same direction.

CHAPTER XV

AN INTERVIEW WITH THE MAYOR



30 A Mayor in his robes and chain of office. Notice the pair of mace.

I thought you might like to know why the Mayor sometimes wears his "robes of office" and why those robes are so different from any kind of dress we see in our streets to-day. I wrote to the Mayor on your behalf and asked him the questions you might have put yourselves.

7, WESTWOOD AVENUE,
DROITWICH,
January 22nd, 1948.

Dear Mr. Mayor,

I am writing a little book for boys and girls. Part of it is about "clothes," how they are made, where the materials come from and what they looked like in years gone by. I am sure they would be interested to know about your "robes of office" and so may I ask you if you would kindly answer some of the questions they would certainly want answered if they came to see you or if you ever went to see them. The questions are enclosed. Thanking you.

Yours faithfully,
R. D. Bramwell.

[Here are the questions I sent to the Mayor and his replies to them.]

1 *Why do you sometimes wear a scarlet robe?*

That is not a very easy question to answer, but I will do the best I can for you. You must know then, that the Lord Mayor of London is the equal of an earl, and some people say that it is because of this that he wears the special robe of an earl. The mayors of other towns copied him, so that mine, I suppose, really goes back to that. On the other hand it is also said that because scarlet is the colour used by judges and because the mayor is—in his smaller way as the chief magistrate on the bench—very much concerned with the law and with dealing out justice, he too wears a scarlet robe.

2 *Is there any special reason for wearing the robe to-day?*

No, I suppose not, though it once had a considerable value when the mayor had personally much more to do with running the affairs of the town than he has to-day. For example, it was once his job to test weights and measures to see that there was no cheating going on.

31 The Mayor and Town Clerk discuss the possibilities of a new housing scheme.

It was useful then to let the townspeople know that the mayor was carrying out his important duties properly. Often, in those days, he would have a man carrying a mace to go with him.

3 *Would you please tell us about the mace?*

As a matter of fact in Droitwich we have a pair. They are silver and nearly two feet long. One dates from 1646 and the other from 1660. They are beautifully made but the maces which were at one time carried by the "sergeants" were really clubs for knocking unruly people over the head. They really did show the mayor's power to keep order among the townspeople. Later they became just the symbol of that power and the maces were made into objects of beauty which represent Royal power and authority given to the mayor for the time being.

4 *Sometimes you wear a "chain of office." Will you explain how that came into being, please?*

Certain of the great officers of state have always worn gold chains when they took up their duties. Perhaps it is not being too fanciful to suggest that the putting on of the chain stands as a symbol of becoming the faithful servant of the king and of being obedient to his orders. This was so in Droitwich in my father's time, and, if you examine our chain, you will find many " links " showing the names and dates of past mayors. It was the custom then for each mayor to give a gold link bearing his name to replace one of the original gilt links of which the chain was once formed. The custom was dropped when it became known that many good people were declining to be mayor because they might not be able to afford to buy their gold links. At first they were certainly simpler than the present chains because sometimes mayors have added links in the form of tablets or shields with their names engraved on the inside of them. The badge which hangs from the middle of the chain always has on it the arms or crest of the city to which it belongs.

5 *When are the robes and the chain of office worn?*

They would always be worn in going to meet any member of the Royal family who might visit the town. Then I would wear them at any public official meeting, or, if I were asked to wear them, in going to any other public meeting. The chain and badge are always worn with my robe but otherwise, whenever I represent your fathers and mothers as townspeople, I wear my chain and badge only—not my robe.

33 Detailed plans of the new housing scheme are prepared by the Housing Committee. The Council (see illustration on left) then meets and approves the Committee's report and (see above) the officers of the Committee start work upon the scheme. Look carefully at the photograph on the left. This Council Meeting is a formal one, as it is being held in November, the beginning of a new year of office. The Mayor wears his robes and chain of office, the aldermen wear their robes, the mace bearers are on duty either side of the Mayor, and policemen are posted at the doors. Notice the circular layout of the council chamber. What do you suppose is the reason for this?

6 *How do you become and how long will you be the mayor of the town ?*

I would usually have been elected by your fathers and mothers to the Council, but very rarely the Council elects the Mayor from among the ordinary townsfolk. This happened in Droitwich in 1917. Generally, however, the members of the Council elect the mayor from among themselves. I shall be the mayor for one year, though if the councillors thought fit and I chose to accept, I might be asked to go on for another year.

[With his answers, the Mayor also sent me the letter, which you see on the opposite page, in reply to mine.]

Town Hall.
Droitwich

January 24th, 1948.

Dear Mr. Bramwell,

Thank you for your letter of January 22nd. I have answered the questions you have asked on behalf of your girls and boys very willingly.

It is our job to see to the building and care of houses, schools, libraries, roads and bridges. We see to the lighting of the streets and to parks and recreation grounds. It is our duty to see that milk which is sent to schools or sold in the town is fit to drink. It is our job to supply pure water and to remove sewage and refuse. It is even our job to kill off rats and other vermin. These are only a few of the tasks which fall to us—mayors at the beginning of the nineteenth century had much less to bother about, hadn't they?—and which we, through our officers, try to see well done for the townspeople.

With these many things to see to, it is difficult for me and the councillors, who have our ordinary jobs to do as well, to come to meet the girls and boys in school. We would like to tell them about our work, but if we are not able, we are sure they will understand. My good wishes to them all and to you. Perhaps we may meet sometime.

Yours sincerely,

E. Shirley Jones.

Mayor.

You will see from the Mayor's letter how the local councils have come gradually to control the many things about which the townspeople of the early nineteenth century had so bitterly to complain—vermin, houses, refuse, sewage, water supplies, lighting and parks. Each person could do nothing for himself—it was only after people were given the power and the means of working together that conditions could be improved for everyone.

THINGS FOR YOU TO DO

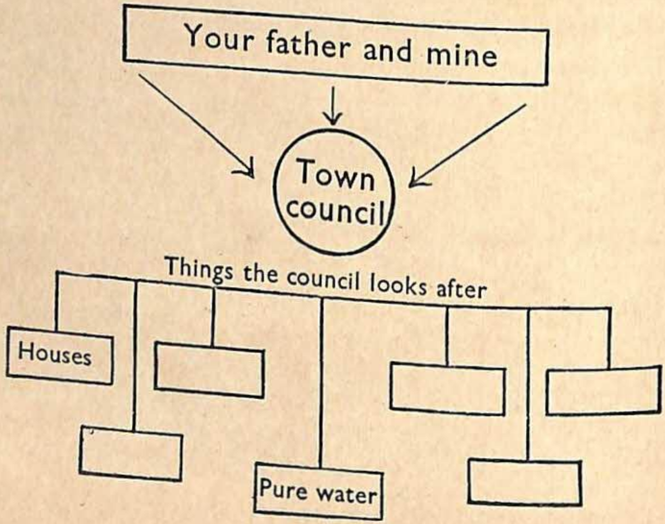
1 Write a short letter to the Mayor saying "Thank you" for his good wishes.

2 If you look at tombs in your church you may find statues of people buried in them. Notice the clothes they wore. Can you find out when these people lived?

3 When you are coming to school notice what things in the roads are put there for anyone to use—such as pillar boxes, telegraph poles, lamps, drains. Who supplies these?

4 What public buildings do you pass on your way to school? Who supplies these? What kind of jobs do the people who work in them do?

5 Draw a picture like this in your books, filling in the blank spaces:—



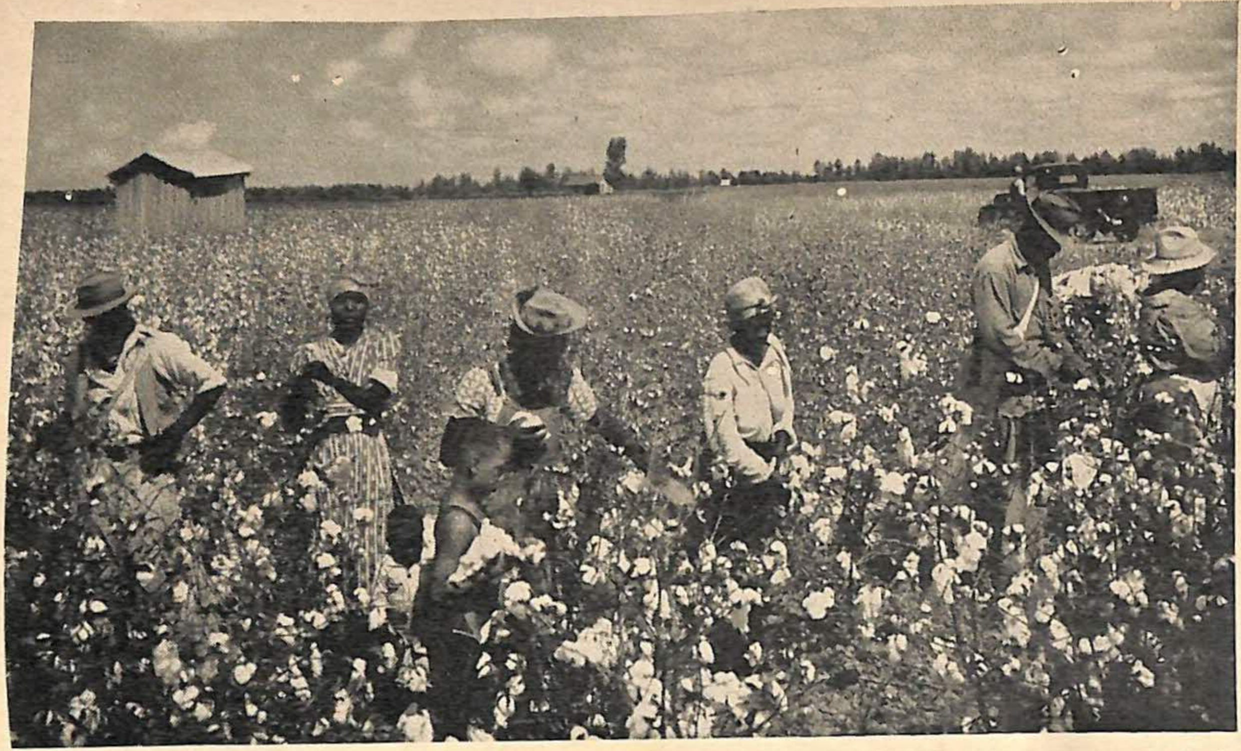
CHAPTER XVI

"WAY DOWN UPON THE SWANEE RIVER"

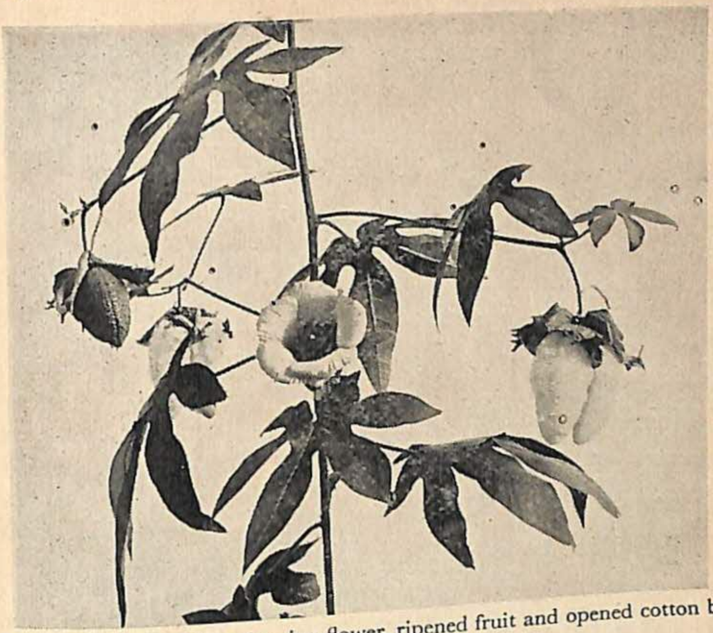
I EXPECT you all know that song, don't you? Do you think there is such a river? Well, there is: it flows to the Gulf of Mexico through the states of Georgia and Florida, two of the southern states of the United States of America. Do you know who is supposed to be singing it? "Oh, *darkies*, how my heart grows weary." Yes! the negroes who live there are supposed to be singing it. They are the children and children's children of the negro slaves. They were freed after the American Civil War which finished about ninety years ago, and so a boy or girl of that time still alive as an old, old man or woman, could have been born a slave.

Though they are now free, the negroes in the Southern States are not treated as the equals of white people. (This is true, too, of the negroes in our dominion and colonies in South and East Africa). In the southern United States they have few schools, and very few colleges; they have poor health services and few doctors. They travel in separate coaches on the railways and are not allowed in some hotels and restaurants. We have not always treated negroes as our equals in this country, though most of us do so to-day; but then they do not live here in large numbers, and we do not need to be afraid that because they can live cheaply they will be able to replace our own workmen by taking smaller wages. For you and me the important thing to remember is that we should not laugh at them or be rude to them because their skins are a different colour from ours. If they are backward in our Empire we must give them our protection, give them schools, and help them in every way we can.

The negroes were brought from West Africa to work in the cotton fields as slaves. Now, as freemen, they still work there, for in the south, cotton is said to be "King" because it is the most important of the crops grown there.



34 Here are cotton pickers at work in the State of Mississippi. Notice the bags carried by all except the youngsters. Look closely at the cotton bolls in the bottom right hand corner of the picture : Can you tell that the sunshine is bright? How?



35 Close up of cotton plant showing flower, ripened fruit and opened cotton boll.

In this part of the U.S.A. no frosts occur for seven months in the year. It is certain, then, that we could not grow cotton for ourselves in this country, and we should have to go without it if we could not get it from other countries in exchange for making it up, or sending them something of our own. In the spring and early summer there is plenty of rain, and hot sunshine. Very early in spring the land is ploughed and then harrowed to break up the lumps of earth. Then the cotton seeds are drilled, that is, planted by a machine in straight rows. This would make the plants grow very close together so they are thinned out as your father and mine would thin out lettuce. The negroes hoe out those plants which are not wanted, and those which are left grow quickly in the rain and hot sunshine. Just as our fathers must keep plants weeded by hoeing between the rows, so, for the same purpose, the cotton farmer uses a machine called a cultivator in his fields.

36 Bales of cotton being taken to the warehouse. Notice how tightly they are packed.

In the summer white flowers begin to open on the plants which by that time are waist high. Gradually the blossoms change to pink or red. Soon they die off, leaving the seed pods to form. When the seeds are ripe, the hard shell of the boll which contains them bursts open, and there inside are the seeds, carefully protected by a mass of cotton.

This is the time when the negroes begin the hot, tedious, back-breaking job of picking the cotton. They move slowly along the rows picking the cotton from the bolls and dropping it into long sacks which hang from straps, or tapes, over their shoulders. When they have filled their sacks they take them and empty them into baskets put out on one of the dirt roads which wind across the dusty fields. As they work they must often sing the songs you call negro spirituals. We have already spoken of one of these.

Cotton is grown in most of these Southern States from Texas right round to North Carolina, and picking goes on from September until about Christmas because the bolls do not all open at once. The negroes pick all there is in the cotton boll—that is, seeds as well as lint. Before the cotton is made into great bales for shipping, the seeds are removed in a machine called a "gin." It consists of two spiked rollers close together but working opposite ways. These tear the cotton away from the seeds which fall through and are collected. Oil is crushed from the seeds, which, by the way, we should call a " by product " of cotton growing. This oil is used, together with others, in the making of cooking fats. How many of you have never had cotton-seed oil, did you say? The crushed seeds can be fed to cattle; ask any farmer who lives nearby to show you " cotton-seed " cake.

The loose cotton is pressed down hard into a " bale " so that a lot of it will not take up too much room in the ship's hold. The bale is kept together by a sacking cover, and thin iron bands. Some of these from the farms along the Mississippi River may be brought to the coast by flat-bottomed river steamers called "stern wheelers" because they have big paddle wheels behind to drive them along. You may have seen such ships in films like *Showboat* or *Mark Twain*. From other farms the bales come to the ports by rail. Here they are loaded into the vessels which bring them across the Atlantic Ocean to the busy, muddy waters of the River Mersey, with its miles of docks and great warehouses. Some of the cotton may go direct to Manchester Docks. How can Manchester, which is thirty miles away from Liverpool, get cotton direct from the sea, do you suppose?

THINGS FOR YOU TO DO

1 Draw a rectangle 2-in. long and ¼-in. broad. Divide it into ¼-in. squares. Colour in five of them: these will stand for the value in millions of £s of cotton coming into Britain in 1947 from the U.S.A. All the squares stand for all the cotton coming into Britain.

2 Make a calendar of the cotton farmer's year:—
Spring .. ploughing, harrowing, etc.

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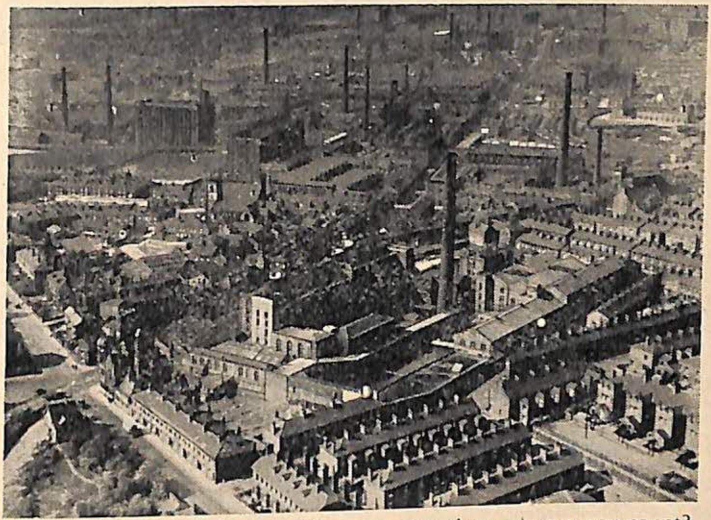
CHAPTER XVII

VISIT TO A COTTON MILL



37 Oldham, my uncle's town. How many smoke stacks can you count? Notice how close together the houses are built. Where are the parks and recreation grounds? Such conditions have been left over from the 19th century: it is taking time and money to rebuild and replan our towns.

WHEN I was a small boy my father and mother used to take me to my auntie's house in Oldham, not far from Manchester. We usually went at Christmas time. I remember the choirs and bands, called the "waits," that used to come round at night to sing carols. I also remember being able to count, from the bedroom window of my auntie's house, twenty-seven factory, or, as they say, mill chimneys. In those days my two cousins, Violet and Dorrie, wore clogs—you know what these are to-day because during the war leather has been difficult to get, and wood has been used for shoe soles—clogs with heavy irons round the edges of the soles: they also wore big shawls when they went out to work. The shawls covered their heads and fell down over their shoulders, and half way down their backs. Yes, they went out to work in a mill.

One day my Uncle Allan took me with him to work. The factory we went to was a huge brick building with a tall brick chimney. On the chimney in white-faced brick was the name of the mill—MILAN. He showed me where the cotton first came into the mill in bales. My word, when the bales were broken open the cotton did look dirty. It has to be cleaned before it can be used, and so it is put into a machine which beats it and shakes it, and a current of air takes the bits of leaves and twigs, seeds and boll covering out of it. It is not washed as wool is, because it is not greasy.

Next my uncle took me to see the carding machines. "These machines," he said, "are really big combs. All they do is to comb the cotton so that all the fibres lie in the same direction." We followed the mat of cotton on to the next machines which began to spin it, starting first with loose rolls of soft cotton-woolly looking stuff which my uncle broke and joined up again merely by gripping the two ends and squeezing them together. More and more machines pulled and twisted the cotton until it became thin and tough, something like sewing cotton. Uncle said that the yarn was "60 count." (Look at a reel of sewing thread: on the label you will see a number 40 or 60 as well as the length of cotton on the reel. This number is "the count,") That means that there are 60 hanks of cotton each 840 yards long which together weigh one pound. 60 × 840 ÷ 1760 will tell you how many miles of this thread weighs a pound.

"Can I see the weaving machines?" I said. "You mean looms, lad," said my uncle. "No, you won't see them here; this is only a spinning mill. We send the cotton on to the dyers and the weavers for making up. That's usual in Lancashire." "Oh," I said, a bit bewildered, because I did not at all understand why the cotton had to be carted about to so many different places.

It was years after that I went with a party to a weaving mill situated in a different town, Bolton, among rows and rows of little brick houses without front gardens, and built all the same way. We were there before 1.30, when the men in overalls, and the girls in shoes and overcoats were streaming back through the gates after their dinner hour. Inside, it was very much as it had been in a woollen mill. The looms made a frightening noise. We could not hear ourselves speak though we were all very interested in the cleverness of the machines. We were quite glad to get out into the quieter part of the mill where the cloth was being inspected and wound up on long reels like huge camera bobbins, before being sent away.

Some of the cloth which is woven is plain. Then it can be dyed all one colour, or it can be printed with patterns. Some patterns, as you know, are woven in, in which case you will see exactly the same pattern on both sides. When the pattern is printed on, it appears very faint on the underside. The girls will know what print dresses mean. Some of the cloth is wanted white, in which case it must be bleached because, as it comes off the loom, the cotton looks grey or yellowish. Chemicals are used for this purpose. They are made chiefly from coal and salt, both of which are produced nearby.

The Lancashire that I knew as a small boy is still very much the same in many ways even though the girls don't wear clogs and shawls any longer, and even though the cotton industry has been through very hard times. The mills used to send cotton from England all over the world, but especially to India and China. Now India makes much of the cheap cotton wanted there. Before the last war, the Japanese too were able to sell their cloth to the poor people of Asia much cheaper than we were. They could do this partly because they paid their workpeople much smaller wages, partly because they were nearer to the people who wanted to buy. But to-day, again, we need to send out cloth, only this time it will be of the best quality, for the Indians and Japanese have not yet the skill to beat us at making that. Perhaps your own mother has gone back to work in a spinning mill or at a loom so that our country can offer good quality cloth to other countries in exchange for the things we need from them.

THINGS FOR YOU TO DO

1 Rewrite these processes in cotton manufacturing in their correct order:—

Weaving, cleaning, spinning, combing, finishing, printing.

2 Make a graph of the number of people working in cotton mills using the following figures, given in thousands:—

1935	1937	1939	1941	1943	1945	1947	1948
469	433	395	297	224	209	267	..

What do you notice about this? Why do you think this has happened?

3 Say which are true of the following and write them down:—

The number of workers in the cotton industry is going down because

(1) Japan, India and other countries are making their own.
(2) The machinery of our mills is new.
(3) People who can find other jobs will not work in the mills.
(4) Cotton is getting more difficult to grow.
(5) Negroes will not work as hard as white men.

CHAPTER XVIII

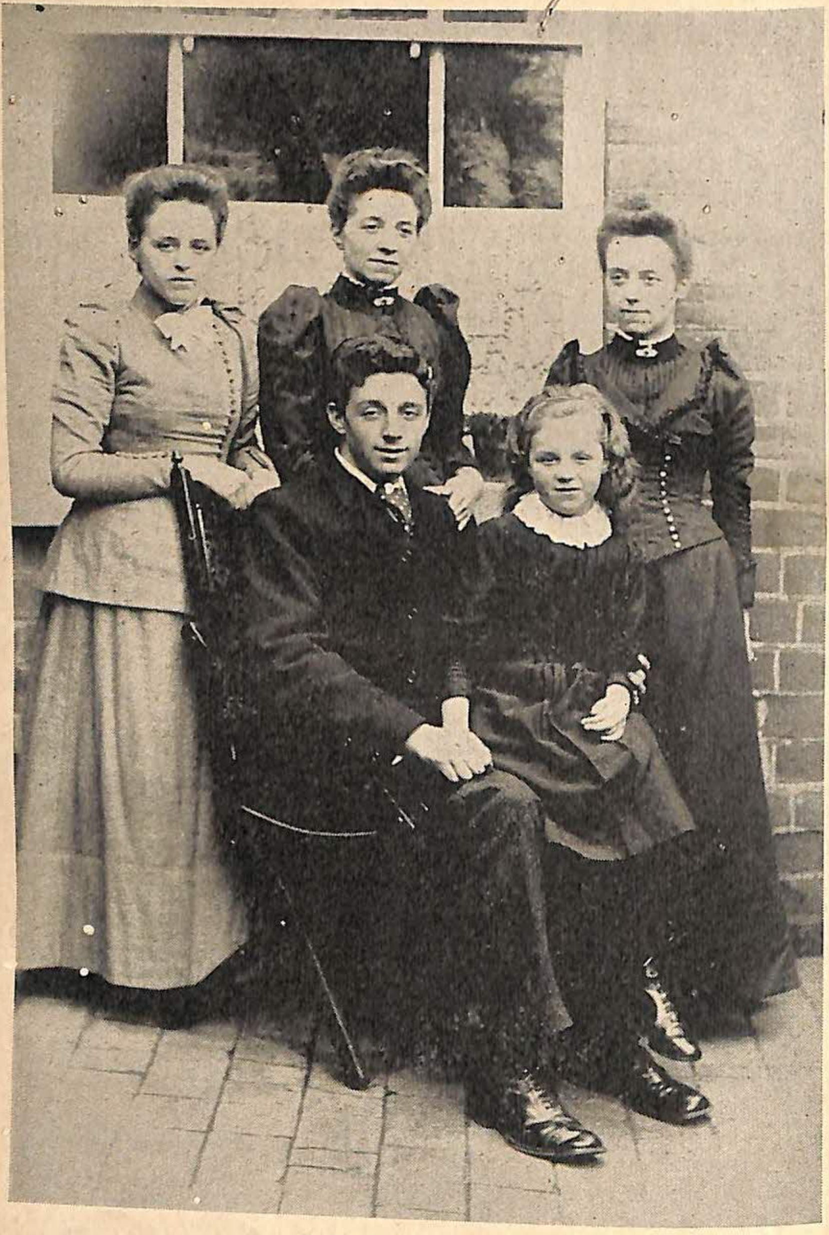
MY MOTHER IN 1891

I ASKED my mother if she would find all the old family photographs for me. When she had found them I looked them through. They were all very interesting indeed, and we laughed a lot about a good many of them. At last I chose a photograph. Mother said that she wouldn't mind if I had it put in this book: so there you see it on the opposite side of the page.

The woman on the left is my Auntie Daisy. Look at her frock. It is so long that it might drag in the dirt of the streets, and they were much dirtier because wagons and cabs were drawn by horses, though mother says the trams then were driven by steam. Notice that the frock has a high collar, and long sleeves: it is made of plain grey cloth of wool and cotton mixed. Nylon and artificial silk were not made in 1891, and the stockings hidden by the frock are black woollen ones like the little girl is wearing. The little girl is my mother. Do you see her boots? The three ladies, who are my mother's elder sisters, are also wearing boots. If you look closely you will see that my mother has long hair: it was in two plaits each tied with a bow of ribbon. The elder sisters have their hair in buns behind their heads, for this was long before the days of short hair, or votes for women.

The boys will probably notice that the man in the picture, my Uncle Jack, has no turn-ups to his trousers; that he is wearing boots; that his coat buttons high up; and that his tie is tied after the fashion of the times in a big loose knot. The three other brothers are missing from the photograph, but the family was eight altogether, quite a usual size for a family in those days.

The chair is a folding one of a kind which you do not often see now. It has a back and bottom of thin carpet material. It would be quite comfortable to sit in. Notice the lace curtains in the window behind the group. Yes,



38 My Mother in 1891.

it is a group: it is not a snapshot, but was taken by a photographer who came to the house with a big camera. That is why everyone is specially dressed for the occasion. The photographer had no rolls of film in those days, but the picture was taken on a special sort of glass plate. To protect this from the light, the photographer would cover the back of the camera with a big black cloth. When he wanted to look at the group through the lens of the camera he would have to climb under this black cloth: to make the camera take a picture he had to reach round to the lens at the front and pull off a little black cap. While he did that he might tell you to "Watch for the dickie bird." Then he would put the cap back over the lens, and that would be that!

1891 was four years after Queen Victoria's Jubilee, and ten years before she died. Things have changed a great deal since then, and if you ask your mother to let you have old photographs going back, say, forty-five years, you will find out many things about the changes which have occurred since. You will probably get pictures of the first motor cars, and the first aeroplanes. Your mother or father may be able to show you pictures of soldiers in the First World War. Your father may be able to tell you about the first crystal wireless sets, and you will certainly see some very great changes in fashions for women, and perhaps a few for men.

CHAPTER XIX

NYLONS FOR THE LADIES

MY mother's sisters did not wear nylons: they did not brush their teeth with nylon: they did not scrub their nails nor brush their hair with nylon. Women wore thick knitted woollen stockings, and they brushed their teeth (if they brushed them at all!) with brushes of bristles which grew on the back of a pig. They had none of the new kinds of cloth, no plastic mackintoshes, no nylon underclothes because though we have known about "plastics," as they are called, for ninety years or more, they have only been made in big quantities in the last thirty years or so.

These cloths are not made of natural fibres like, for example, wool. They are made of artificial fibres produced from wood or from very short cotton fibres called " linters " which would be too short to make into cotton cloth in the ordinary way. Another very important material from which plastics can be made is coal, though if you tell your sister that she is wearing coal on her legs she may not believe you. She may be just as surprised if you tell her that her stockings may once have grown in a Canadian forest.

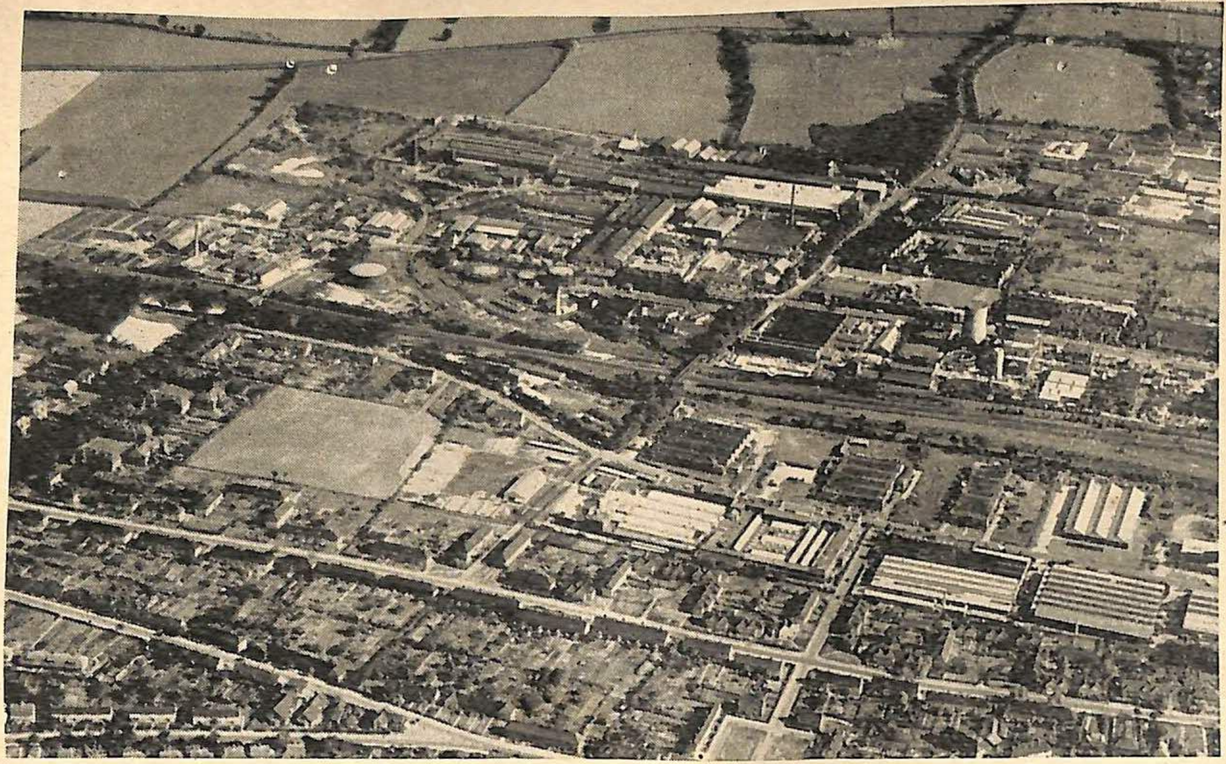
You know that if you boil glue in water you will get a thin gummy liquid, and sometimes when the glue is fairly thick you can make the brush pull away from the pot so as to leave a long string behind it. Nylon and artificial silk are made in something like the same way.

One way of making them is to leave an acid to mix with cotton linters. The acid which is used is the same chemical as the vinegar in your bottle at home, and it makes the linters soft and pulpy. After some days, the linters, now very white and in little hard lumps of all sorts of shapes, are dried and then crushed into a fine powder. The powder is dissolved so that a gluey liquid is made. When this liquid is forced through very fine holes in a nozzle it comes out like threads of water from a garden syringe, and it does in hot air exactly what the glue did: it sets hard and shiny in long fibres. These are twisted together to make a strand, and the strands are twisted together to make a thread.

These threads can be woven just like cotton or wool, but from them you get a very smooth kind of cloth. Like wool they can also be knitted by clever machines so that, for example, underclothes and stockings are often knitted: that is why they will "ladder," as your mother says. During the last war our mothers and sisters were not able to get new silk and nylon stockings. Most of the cloth which was woven was wanted for other purposes such as parachutes and silk linings for flying clothes. We shall see, you and I, in our lives many changes in fashions as well as in the materials of which our clothes can be made. Already we can make artificial textiles, leather and rubber, and for some things these are better than the natural materials.

We shall see later that coal can be made into hundreds of useful things. Plastics of all kinds can be got from it, so it is not surprising to find that some of our important silk works are near, or on, the coalfields in towns like Derby, Wolverhampton and Flint. (Will you remember that every time coal is wasted there can be so much less cloth to clothe you, and so much less of a great many other things?) Derby, Wolverhampton and Flint are old towns, and they have still their old tumble-down houses, their narrow ugly streets; but many new industries need not be housed in the old towns on or near the coalfields. Many of the new factories do not use steam power and so do not have to burn coal. Instead electricity is brought to them by overhead wires and therefore they can be built where it is most convenient, which may be in some small out-of-the-way place nowhere near a coalfield.

On the other hand the government may try to persuade some of the new factories to go to the old towns—or, at least, to the "satellite" towns (*see* p. 33) built near the old ones. Why do you suppose the government



39 A trading estate in Letchworth. Pick out as many points of difference between this photograph and Illustration 37 as you can.

might want them to go there? Do you remember what we said about your father helping mine and most of the rest of the world? In many of the old towns there was only one important industry, and that was all very well so long as that industry was making good profits; but supposing that for some reason the industry suffered bad times. Then most of the workpeople would be unemployed. They would have little to spend, so the shops and the cinemas and the buses would do badly too. Everyone, you see, depends so much on everybody else. The government, then, might try to persuade new industries to go to the old towns so that even if one industry were doing badly, there would still be others which might be doing quite well. Then the shops and the cinemas and the buses would not suffer half so much. The whole life of the town would not stop as it once would have done if its only industry went through difficult times.

THINGS FOR YOU TO DO

1 Make a list of the things you know or can find out are made of nylon.

2 Look at the word "plastic" in your dictionaries. What exactly does it mean? What other common words begin with "plast—"

3 Rewrite the following putting in the missing words:—

" Plastics can be made from . . . . . and . . . . . and . . . . . and many other things. Artificial silk and . . . . . are often made from . . . . . It can be spun, woven or . . . . . into clothes. The factories where the silk is made can be placed anywhere because they use . . . . . power brought by . . . . . wires."

6

BOOKS ABOUT SOMETHING TO EAT

Boulton, W. H.	*Splendid Book of Empire Railways*	Sampson Low, Marston & Co.
Darling	*The Seasons and the Farmer*	Cambridge Univ. Press
Fawcett, R. (Ed.)	*Where does it come from? Bread*	Gawthorn
Hall, H. R.	*Days Before History*	Harrap
Rowland, T. J. S. and Smith, L. G.	*Vital Things for Lively Youngsters*	Cassell
Weaver, R. M.	*Living Geography, Europe*	Gregg Pub. Co.

CHAPTER XX

WATER AND BREAD

THINGS FOR YOU TO FIND OUT

1 Try to find out
  (*a*) Where your water supply comes from.
  (*b*) How much your father has to pay for it.
  (*c*) Whether it is hard water or soft.

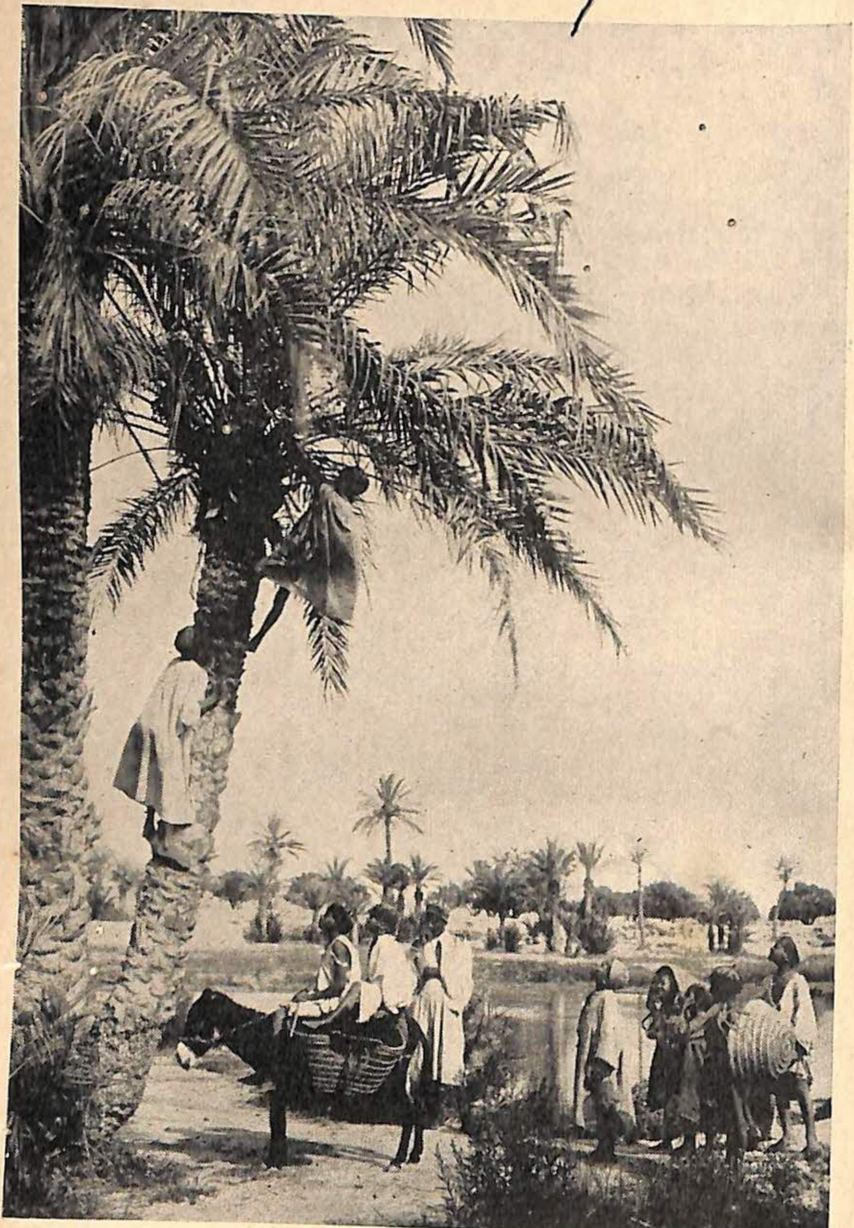
2 Ask your mother what difference "hard" water makes to her when she is washing clothes.

3 Have you ever seen a "spring"? Can you find out why it flows?

4 Are there any inns or public houses in your town called by the names of trades? What trades are they and are they still carried on to-day?

You get used to saying some pairs of words in one way. For example, you always say—"It's raining cats and dogs": you say "bread and milk," not milk and bread. Why, then, do you think I have written Water and Bread at the top of the page? It is because water is really more important than bread. Without bread, without any food, you would go on living for some weeks, certainly "forty days and forty nights," as it says in the Bible. You would, of course, get very weak, become very tired, and begin to feel very cold. But without water you would die in a few days. Most drinks are very largely water. Thus, more than nine-tenths of milk is water; tea, coffee and cocoa are nearly all water, too.

When people began to live all the time in one place in this, and in any other country, the first thing they had to do was to make sure they could get water not far away. That is one good reason why our villages and towns, and even the great towns which have grown from older and smaller ones, often stand on a river or a stream. In some parts of our own country, in spite of the rain, water is difficult to get: where the rock lets rain soak away quickly, as in limestone or chalk, you will



40 Tunis, an oasis scene. What are these boys doing? How are they dressed? Can you guess why? What kind of animal are the two boys under the tree riding? Notice the clear bright sky and the strong shadows.

find the people live bunched together in places where water can be found, or else they live where limestone or chalk comes up against some kind of rock which will not let water pass through: then a line of springs will be formed, and on the line of springs there very often grows a line of villages. Over much of our country there is plenty of water, and so you will find farmhouses a long way from their neighbours because they can get well-water for their supplies. In desert countries, however, people live all together in the oases, or if they must move, manage somehow to carry enough water with them for their journeys.

When the villages and towns were small they could quite well depend on streams or rivers for their water supplies, but what was to happen to them when they began to grow, especially when the Factory System and the Industrial Revolution brought great numbers of people together? Not only did the people have to go farther and farther for their water but also, because they knew very little about these things, they began to tip more and more filth and dirt into the streams, so that the water became quite unfit to drink. To-day the collecting of rubbish of all kinds—waste paper, tea leaves, bad vegetables, cinders, and so on—is an important duty of the local councils, and to the health of towns the dustman is in his way as important as the doctor. The factories were also to blame for some of this fouling of the water, and sometimes, even to-day, fish are poisoned by what escapes from the factories into the river.

London's water-supply a hundred years ago was drawn from shallow wells and from the River Thames. A little was brought into the city from a distance through pipes made of the hollow trunks of elm trees. Does that help to answer the question you were just going to ask—why didn't they lay pipes as we do to-day and bring water from somewhere where it was clean? They had no metal pipes and concrete was unknown. When these kinds of pipes first came into use, water companies began to bring water from the Thames to sell in the great city, but it was still the filthy water of the river into which ran sixty-four large sewers. Many of the great towns of the north were not so well off even as this, and in one of them only a quarter of the houses had any water supply at all. In another it was sold at very high prices. People waited for a long time to get it from a common tap in the street, and might then have to carry it a long way home.

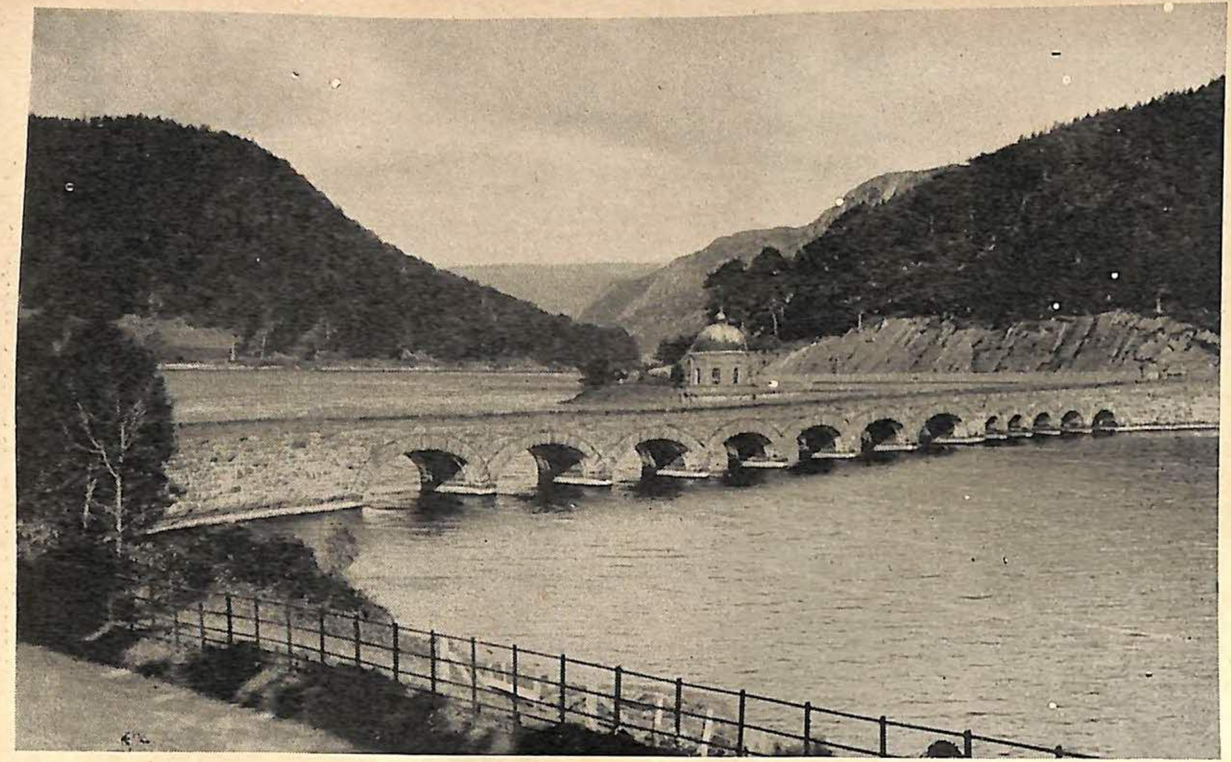
Water, as we know to-day, thanks to the work of a Frenchman, Louis Pasteur, can carry dangerous germs. One sort causes the terrible fever called cholera. Anyone suffering from this passes the germs out of his body with the other waste products. In the old towns where sewage and drinking water often mixed together, anyone else using that water was likely to catch the fever and spread it in his turn, so causing what is called an epidemic. There were bad cholera epidemics in this country at various times between 1800 and 1870. To-day we usually think of cholera as being a fever which only breaks out in Eastern countries such as India and China where, in the great crowded towns, sewers and water supplies are still open rivers. A cholera epidemic in 1947 killed thousands of people in Egypt. Many nations including our own then sent aid to Egypt so as to stop the fever from spreading further, for disease of this kind is not cut off by the lines men draw on maps and call frontiers. Health is an international interest.

In 1835 Parliament passed an Act which ordered the setting up in each big town of bodies of men who were to look after the well-being of the people. This was the beginning of much of the work spoken of by the Mayor in his letter. One of the first duties of these bodies was to see that a good supply of pure water was brought to the townsfolk. Some towns were able to do this quickly but in others the supplying was still done by companies which wished to make as big a profit as they could, and which would therefore only put pipes and taps into those

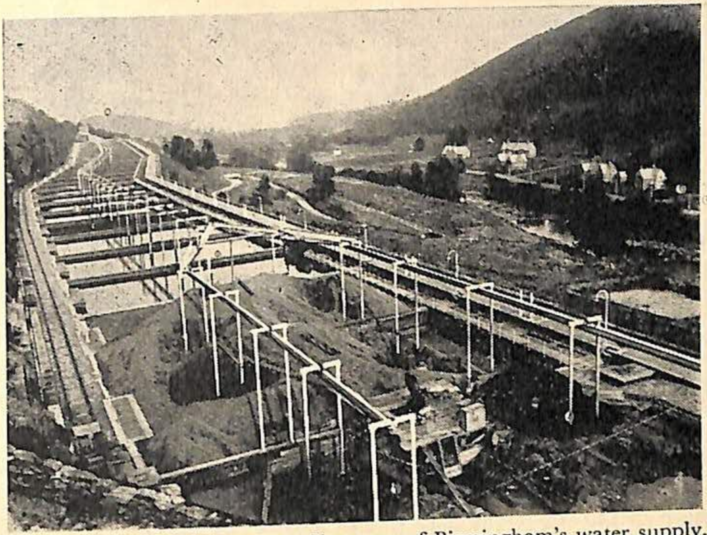
41 Here are four sewers under a roadway in Birmingham. The smaller ones are about 3 feet across and the larger 4 feet across. Altogether the city has over 1,500 miles of sewers to look after and clean. Without them it would soon be impossible for people to go on living in the great towns.

districts where people could afford to pay well for them. Companies supplied London until 1905 when the Metropolitan Water Board bought the companies for £47 million. By that time Parliament had passed the Public Health Act, of which we spoke in an earlier section of this book on Housing, which obliged every local council to supply, or to have supplied by a company, enough pure water for the people. The word *pure* is important because if you can prove that you have been taken ill through drinking impure water supplied by your council you can make them pay you heavy damages. Not long ago, some people in Croydon made their corporation pay them damages because they had been taken very ill through drinking impure water.

At first water was collected in reservoirs close to the towns: but as the towns have grown greater and greater, their Water Departments have had to bring supplies from further and further away. Manchester gets its water from Thirlmere over ninety-five miles away. Birming-



42 Part of Birmingham waterworks, the Elan Valley, Central Wales. This reservoir will hold 8,000 million gallons of water. About 70 inches of rain fall each year in these high Welsh Mountains. The water from the reservoir is soft.



43 These are the beds which filter part of Birmingham's water supply. Each day the million people of the city need 44 million gallons of water for drinking, cooking, washing and bathing, and for industrial purposes.

ham's water comes from the Elan Valley in central Wales, more than seventy miles away. It was certainly quite impossible to do this in the days before iron or steel pipes could be made.

You will notice that both of these great towns collect their water in mountain districts. There are three chief reasons for this. The first is that the water starts at some height above the town to which it is to be sent, and though pumps may be necessary at places, it must be easier to let the water run down rather than have to pump it up. The height of the supply above the town is called the "head" of water. The second reason is that these regions have much more rain than places situated lower down, and on the east of our country. Wet winds from the Atlantic Ocean and the Irish Sea bring heavy rainfall to these mountains. The third important reason is that the water supplied is "soft," because these high mountain regions are often made of hard rocks which will not dissolve in water.

If you live on limestone or chalk rocks, or indeed on a number of others, you will know that the water which you boil in your kettles leaves behind it what mother may call " fur," but which is more widely known as "scale." The water which leaves "scale" in the kettle is known as " hard " water. You will know that it is difficult to make soap give a good lather in this kind of water. That which leaves scale in a kettle will also leave scale in boilers, and so, where hard water is used, they have to be cleaned more often, which costs factories and mills much time and money. Water which does not lather will mean that more soap has to be used everywhere—in laundries, hotels and houses: soap, too, costs money. Where the water is hard it may pay some firms to have water softeners fixed. We have already seen how important the supply of soft water is to the scouring, dyeing and bleaching of wool in the West Riding, and to dyeing and bleaching in Lancashire.

So far we have thought of water mainly as a drink, but it has other uses. A good water supply also means that a town can have swimming baths, washing baths, and wash-houses. To safeguard good health you need a clean body and clean clothes. One hundred years ago baths fixed in houses were very rare, and running hot water was not known at all. Baths were not used in working-class houses in those days, and though local councils have been building public baths for the last hundred years they were not much used until fifty years ago, late in the 1890's. There was no bath fixed in my mother's house when that photograph was taken (p. 100), and very many of the older houses of this country are still without them although all the new ones have bathrooms built into them.

As our people have become cleaner so they have become healthier, and lives have become longer. Bad epidemics of the kind which used to kill off thousands in our big cities are now stopped by supplying pure water, and by collecting refuse. We have learned, too, about germs, and the way diseases are spread, and so we are able to take measures to fight epidemics as soon as they look like beginning. Look after yourselves: be clean; don't wait till mother tells you to wash, and when you grow up see that your district is clean, too, won't you?

THINGS FOR YOU TO DO

1 Correct the statements which are not true and rewrite all of them.
  (*a*) To make hard water soft we must boil it.
  (*b*) Rain water is hard water.
  (*c*) Soft water leaves "scale" in a kettle.
  (*d*) Water from limestone districts is soft.

2 Draw a picture of the kind of pump used for supplying water. In what way is it different from a bicycle pump?

3 Fill in the missing words and rewrite these sentences:—
  (1) . . . . . water must be supplied by the . . . . .
  (2) In the past . . . . . have broken out because the water supply was . . . . .
  (3) In . . . . . countries even to-day . . . . . kills many people because the . . . . is . . . . .
  (4) The Frenchman, ... , ... , showed that water can carry . . . . . , ...

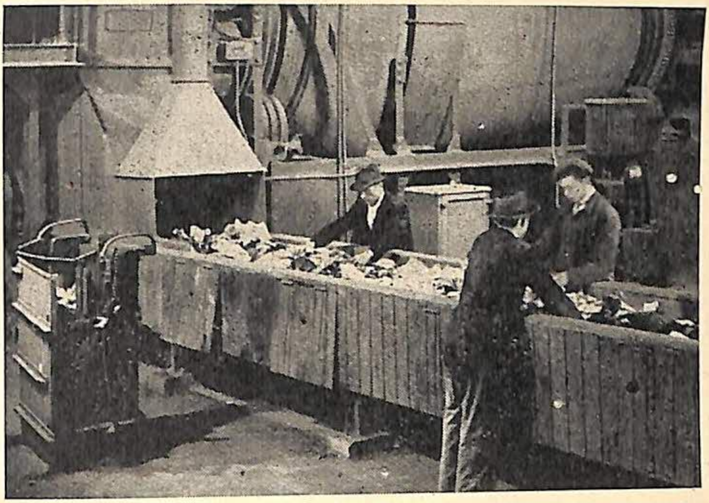
CHAPTER XXI

THE DUSTMAN

44 Mr. Hemming, the Dustman.

THE poster I was looking at while I waited for the general foreman of the Borough Surveyor's department said, "One ton of paper will make ceiling board for twelve houses." The foreman was to take me out to meet the men who worked on refuse-collecting, or, as you might call them, the dustmen. I would not pretend that it is a thrilling job, but it is a very important one, and much more interesting than you might suppose.

Mr. Hemming is the foreman lorry driver. Three men work with him fetching the bins from the backyards of the houses, emptying them into the lorry and taking the bins back where they belong. The lorry, by the way, has four lids, only one of which is open at any time so that the dust inside cannot blow about. The men work from half-past seven to twelve, and from one to five each weekday except Saturday, when they finish at mid-day: for this work they earn something between £4 16*s*. 0*d*. and £5 3*s*. 0*d*. a week. Altogether it takes them just the five and a half working days to get round my small town of 7000 people. Every day Mr. Hemming takes back to the tip about five loads each of three tons. So in the week ninety tons of rubbish are collected, which seems to me to be a very large amount for the size of the town.



45 Rubbish is being sorted by these men in a Birmingham salvage works. It is passing along on an endless belt after dust and tins have been taken out of it. Rags, paper, cardboard, bottles, jars, and bones are collected by these and other workmen. Each year the dustmen of Birmingham salvage nearly £130,000 worth of "rubbish." What cannot be salvaged is burnt under boilers to supply heating, lighting and power to the works.

I asked Mr. Hemming what happened at the tip—was the rubbish burnt? Not now, it seems, though it once was. Nowadays it is simply spread out in layers of about six feet thick, and in the course of a few months it settles down. Some parts of it decay, and the chemical changes going on may cause the tip to catch fire by itself: if this happens the fire brigade is called on to put it out again. If it were spread in layers thicker than six feet this would always be happening as the heat would never be able to get away as it does now.

Two men work at the tip, raking the rubbish flat. As they work they pull out bits of iron and steel, bottles and jars, old clothes and rags. These are saved or "salvaged" and later sold. In some big towns the salvage is worth quite a lot of money. Many things are sorted out of the refuse which are valuable if they can be collected in large enough quantities, and what is left over is burnt in incinerators, and the by-products are collected even from that. For my town the cost of building an incinerator and collecting some things would be too great to make it worth while, as the amount of refuse to be dealt with is really quite small.

Mr. Hemming said, in replying to a question, " What do we do if we find anything valuable ? We return it to the Surveyor and sometimes people ring up to ask if we have found something which they think they may have lost in the dustbins. Sometimes, too, they ask us to look out specially for something they have lost. We always do that, but it isn't often that anything really valuable turns up." I wanted to know if there had been any changes while Mr. Hemming had been at this job. He said that there had not, as he had only been working at it for about ten months, though he had heard the older men talk about the days before there were dust bins. All the rubbish from a number of houses used to be thrown out into an ashpit, and it simply went on stinking and collecting rats and flies round it until there was enough to make a cartload, and then it would be taken away.

Before the First World War, say, in 1910, ashpits were quite the common thing. Now, of course, the law compels every householder to have a proper bin with a cover, and with handles on it so that the dustmen can carry it away easily.

The motor lorry replaced horses and carts about 1935—just about the time most of you were born, I expect. There is a photograph of the shining new lorry with one of the men looking very pleased standing by it. It's not so long ago after all, is it, since the horses were replaced ? Mr. Hemming said that a horse could be less costly than a lorry in some places. How could that be, I wanted to know. " Well," he said, "where houses are very close together, one man has to sit in the lorry all the time, and to keep stopping and starting it used quite a lot of petrol. But, you see, a horse—well, you just say, 'Git up, there, me old hoss,' as you go by, and he 'gits up' by himself to the next house. So you don't have to waste a man's work all the time. It wouldn't pay here because the houses are fairly well spread, and we should waste so much time getting backwards and forwards to the tip, especially as we do about five loads a day."

I went on to ask Mr. Hemming if he would give us hints as to how we could help him. "Yes," he said, "I think I can. First of all will you ask the boys and girls to remember that no wet stuff should be put into the bins. It not only attracts flies, but also it soon rots the metal sides and bottoms of the bins, which may mean cut and poisoned hands for us. You can see we all wear gloves, but even then we sometimes get cuts across our wrists if there is jagged metal anywhere." He broke off, and shouted across the road to one of his men. "Bert," he said, "let Mr. Bramwell have a look at that scar across your thumb. There you are," and he pointed to the man's hand, "that's what can happen!"

Another thing Mr. Hemming told me was that the Council did not pay him to carry away anything except household waste. You should not put brick ends, grass cuttings, hedge clippings and things like garden waste into the bins: such vegetable stuff as will decay ought to be buried—("It's good for the gardens, anyway," he said), and that is also true of things out of the house, too, wherever it can be done. If everyone burnt what they could, and buried what they could, the charge for collecting refuse could be greatly cut down and that would save cost to your father and mine, wouldn't it? By the way, don't burn things in the bins: it is just as bad as putting wet stuff into them.

"Last of all, Mr. Bramwell, perhaps you would tell them one other thing," said Mr. Hemming. "We collect paper separately one day a week because it is still very much wanted. In this town we give out sacks for paper, but half of it is wasted just the same: it gets thrown into the bins. We want clean newspaper, and other non-greasy paper and cardboard as much now as we ever did," and he pointed to a poster on the side of the refuse lorry which said, " One ton of paper will make ceiling board for twelve houses! " Thank you, Mr. Hemming!

THINGS FOR YOU TO DO

1 If you know a dustman will you ask him some of the questions I asked Mr. Hemming such as " How long do you work each day " ? " How much rubbish do you collect each week ? " " Where do you take the rubbish ? "

2 Make a list of things you should do and another of things you should not do if you want to help the dustmen to do their work properly.

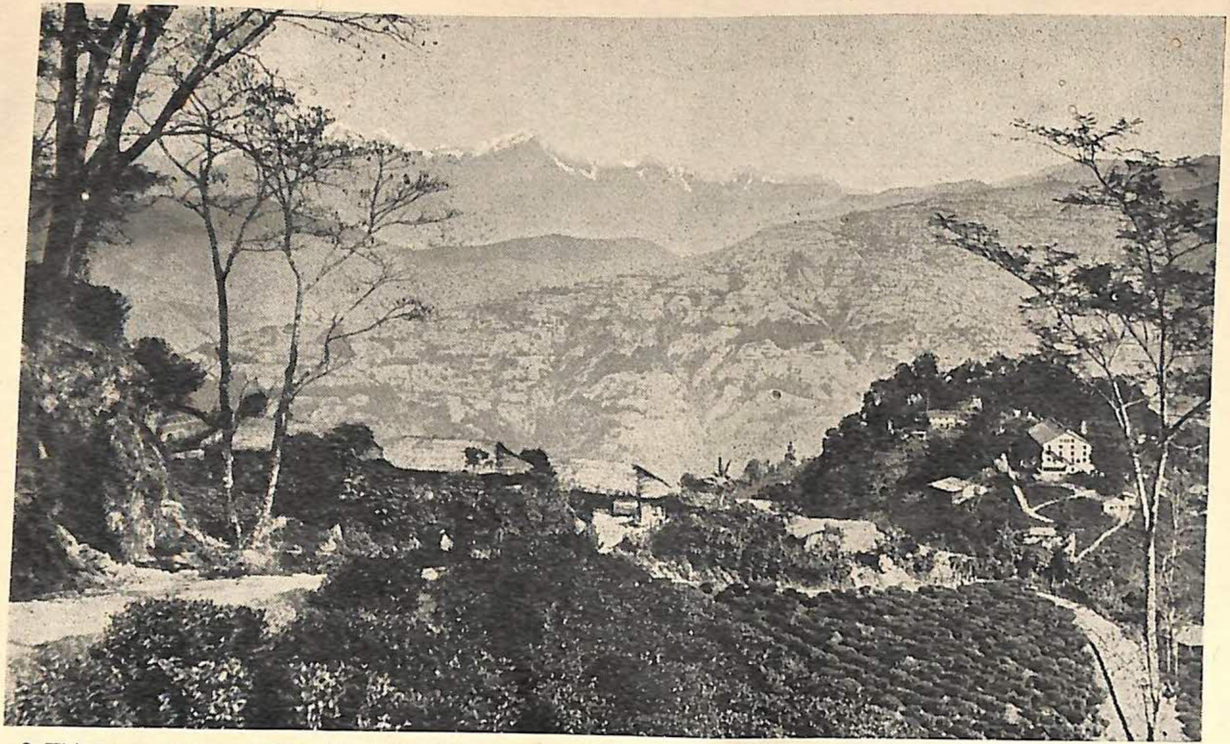
CHAPTER XXII

TCHA or THE CUP THAT CHEERS

"THAT excellent and by all Physitians approved China Drink called by the Chineans Tcha, by other nations Tay, alias Tee, is sold at the Sultaness Head, a cophee house in Sweetings Rents, by the Royal Exchange, London."

So the word "Tcha" which your big brother, or his pals, brought back from the war, was being used in this country for tea a long time ago, because the advertisement you have just read is taken from a paper sold in London in 1658. The very famous Londoner, Samuel Pepys, who kept a most interesting diary wrote, in 1666, the year of the Great Fire—"I did send for a cup of tea, a China drink of which I never had drunk before." At that time tea cost anything from fifteen to fifty shillings a pound, depending on its quality. From those early years when tea was brought here only at a great price, and in small quantities for rich people, it quickly became very widely used. Two hundred years later (in 1863) it was the general drink of great numbers among the poorly paid workers of Britain. To-day, as you know, we and other British people throughout the world drink great quantities of it.

Perhaps you will have noticed that tea is spoken of here as having come from China. So it did, and some of it still does, but much more is now produced in Ceylon and Assam. If you will look in your atlases at the map of India you will find the first is an island shaped like a pear drop to the south-east of India while Assam is as far north-east as possible. Tea grew wild on the hills of Assam, and it was here that planters began to grow it in specially large quantities from the middle of the nineteenth century onwards. Before the leaves get into your teapot they have to pass through the hands of many workers, through many machines, and travel eight or nine thousand miles. Let us see how this all happens.

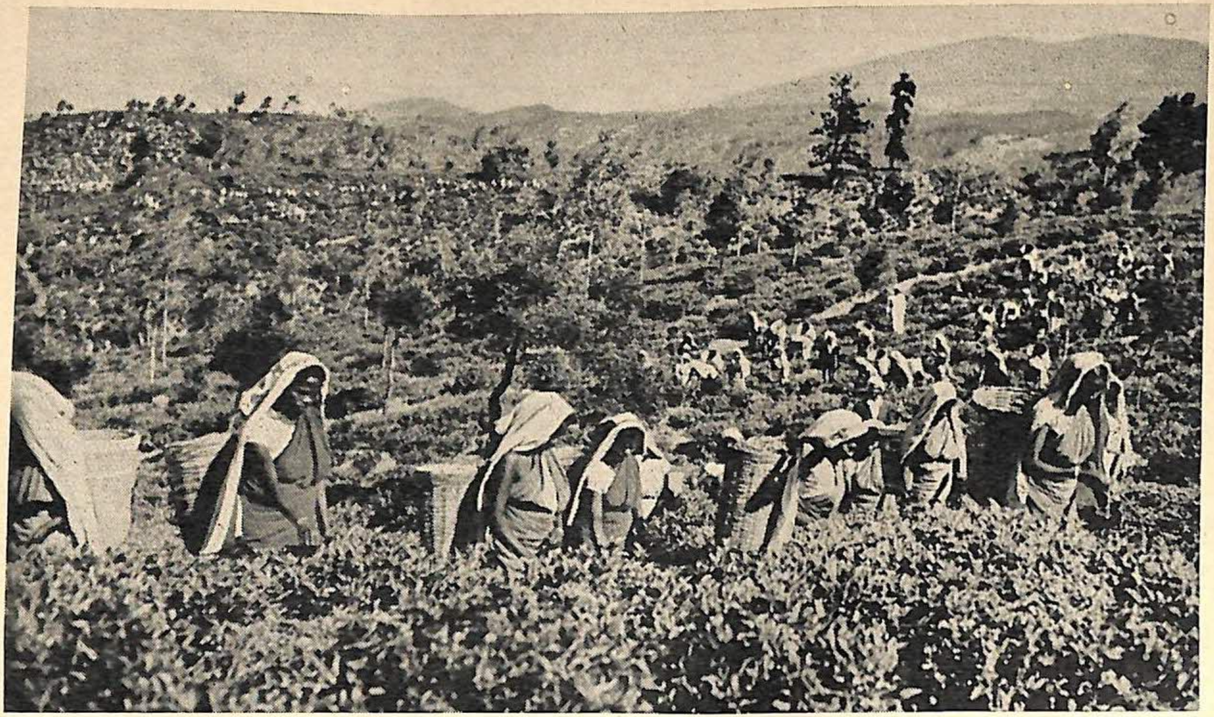


46 This tea estate is near Darjeeling in Northern India. Which do you think is the tea factory? What mountains are they in the background? Who lives in the thatched huts on the left of the picture? Those are tea bushes directly in the foreground.

The plant grows best where there is plenty of moisture in the air during most of the year. The south-west monsoon blows across the Indian Ocean and the Bay of Bengal and meets the high mountains of the north causing a very heavy rainfall in Assam. (Most of the heavy rain falls in the summer months.) It rains, not just heavily as it does at home, but sometimes in inches a day, and in some places between 120 and 180 inches fall in the year. 180 inches is 15 feet, which is probably six times the amount you get in your part of the country. Strangely enough the tea plant does not like to stand with its feet in water any more than you do, and so it is usually planted on the steep slopes of the mountain sides. Some of the best tea comes from the gardens around Darjeeling, 100 miles west of Assam, and nearly 8000 feet above sea level.

Whenever you have heavy rain and warmth together plants grow quickly, as they do in a greenhouse. In its wild state the tea plant grows into a tree twenty to thirty feet tall: but in the gardens it is always being cut back or pruned. This is done for two reasons. The first is that a bush about waist high is easier to pick than a tree. The second is that the tea growers do not want the plant to make wood, and by cutting it back they cause it to grow lots of small twigs and a thick clump of leaves, rather like a privet hedge does. The heat and the dampness make other plants grow quickly and thickly too, and so in the tea gardens the soil has to be carefully weeded all the time. What would you expect to happen when the heavy summer rain poured on to bare soil on the mountain sides? In every gutter, even in this country, you can see the amount of sand and mud which water will carry after a thunderstorm. How much more would fifteen feet of rain in the course of the year carry down if it were allowed to do so? The planters often make steps or terraces on the hillsides to stop the water from running straight down the slopes.

This is how the tea gardens are planted out. The



47 Tea picking. Notice how the women are dressed. Each one carries a basket into which the plucked leaves will be dropped. Notice how the woman in the right centre of the picture is doing this. Are any of them wearing jewellery? How tall are the bushes judged by the size of the woman? Would you call this flat country?

seeds of the tea plant, which are about as big as hazel nuts, grow into seedlings in a nursery. When they are a few months old they are set out about five feet apart in the gardens which have been made ready for them. Some time between their first and second years they are cut right down to within a foot of the ground, and after that they are cut back usually every third year, so that they are something like good sized gooseberry bushes to look at. Big trees are also planted in the gardens to give some shade to the pickers. Though the ground in the gardens is kept clean of weeds, big thickets of bamboos and heavy evergreen jungle trees, often bright with their own flowers or with orchids, grow all around the gardens.

The leaves of the tea plant are picked every ten days or so, and there may be in the year as many as twenty or thirty pickings. This work is done mainly by women, the small, fine-boned women of this northern part of India. Their day's work begins at dawn when the first sunlight turns the distant mountain peaks to gold, and drives away the weaving mists which cling to the hillsides and choke the valleys. Lightly and gracefully in their bare feet they walk up the zigzag paths to work wearing bright coloured clothes of printed cottons. Though they sometimes wear short blouses and skirts their other clothes are not sewn into separate garments, but are made of one or two long pieces wound round, gathered together, and tucked in so skilfully that the women look beautifully dressed. They often wear bright bangles of silver on their arms, for this is one way of looking after metal which can easily be changed into money if it is ever quickly needed. Often, too, they wear through one nostril, a little jewel like a lozenge-shaped or circular ear ring. Over their sleek shiny black hair they wear scarves or shawls, for the baskets which they will be carrying on their backs as they pick tea leaves are hung from a strap which runs across their heads from ear to ear. The baskets are of open wicker work, and usually are made of split bamboo. They are flat on the side which goes against the back of the picker while the other is round like the top of a letter P. Into this basket the picker puts the tea leaves as she gathers them with both hands.

The next time you drink a cup of tea will you try to think of this colourful scene—the yellows, reds and blues of the clothes against the dark green of the jungle—in this mountainous country 8000 miles away?

THINGS FOR YOU TO DO

1 Write down the names of three countries where tea is grown. Why are they good places for growing tea?

2 Ask your mother how to make a "good cup of tea."

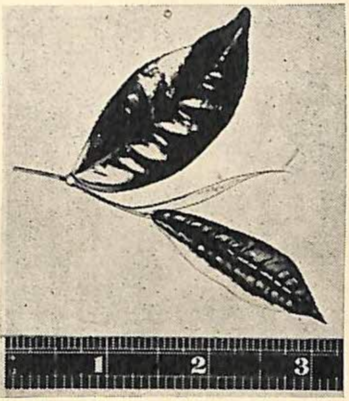
3 Do you know what a "tea clipper" was? Try to find out about a famous yearly race connected with the tea trade.

4 Can you think of any common English expressions which use the words "tea cup"?

CHAPTER XXIII

BLACK OR GREEN

YOU must not think that the pickers take all the leaves off the bushes for if they did the bushes would die. Besides, some of the leaves would be too big and coarse to make good tea. One well-known kind of tea calls itself "tips," and you will find that its advertisements show that only the outer edges of the leaves are used. For the best qualities only the bud and the two end leaves on any twig are picked. The leaves are narrow, and pointed, and between four and eight inches long.



48 Plucked tea shoot. Can you think of any plant which grows near your home which must look very like these?

The tea leaf you put into your pot is black and hard, but when it was picked it was green and soft. How was the one turned into the other? You may think that drying alone would do it, but this is not so. If you have ever pressed flowers and leaves between two pieces of blotting paper under a heavy book, you will know that they dry and fade, but that they do not go black. We must follow the fresh leaves into the tea factory before we can find out the answer to that question.

Green and fresh as they are, the leaves are first spread thinly on shallow drawers with bottoms of wire netting or jute hessian—the sort of sacking material you will find underneath your upholstered chairs at home. Soon, in the warm dry air of the factory, they begin to wither and in twenty hours or so they are ready to be moved on to the next stage.

The withered leaves are now rolled. They are put into a machine in which there are two wheels, one above the other. The bottom wheel spins in the opposite direction to the upper one. This machine squeezes out some of the tannin—an acid which gives tea its bitter taste—and some more of the moisture not lost in the withering of the leaf: it also rolls the leaves up or twists them into the tight sticks you see in the packet in your cupboard. When they come out of this machine the leaves are often stuck together in lumps or balls which have to be broken up in another machine so that each leaf is separate from the others.

Next comes the stage which is most difficult to explain. It is called fermentation. The leaves are spread out again, in a cool place, sometimes on concrete floors. They are then covered over with damp cloths, and are left like this for several hours while fermentation goes on. Fermentation is the change which takes place because of the chemical work done by certain tiny plants, like yeast, and mould. You can see moulds growing on jam, bread, or cheese, or almost any foodstuff which is open to the air for any length of time. It is this fermentation which causes the leaf to go black. If the leaf were not fermented it would stay the grey-green colour of a dried leaf. If the tea grower allowed the leaves to wither and then rolled them without fermenting them, green tea would be produced. When he uses exactly the same kind of leaves but wets them again after rolling them so that fermentation takes place, he produces ordinary black tea.

When the fermentation has gone on for several hours the leaves are completely dried in a flow of hot air. Fermentation stops, and the leaves become the hard black sticks you know. These leaves are graded, then stored with others of the same grade. When enough have been made of the same grade the various lots are well mixed up so that the tea is of the same kind throughout. Then it is packed in chests or packages. The chests are plywood lined with thin sheets of lead, and even the packages you get at home are often lead coloured. This lining is put in to keep the leaves quite dry so that they carry from Assam or India or Ceylon to this country in good condition. If they were open to the air and moisture got in them again, what might happen to them, do you suppose?

The chests are usually brought to the London market where the tea is sold to wholesalers (look at the word carefully: it means those who *sell whole* lots or in big quantities) who mix different amounts of certain qualities to get just the sort they usually sell. They then package it for sending out to the retailer—the man who buys a fair quantity from the wholesaler, and who sells the tea in much smaller quantities across the counter of his shop to you.

When you get a chance will you look carefully at some leaves left over from a pot of tea? The boiling water makes them swell and uncurl once again, and you may be able to see from what kind of a leaf they came.

THINGS FOR YOU TO DO

1 Draw arrows and write words to show how tea is brought from the tea garden to your home. This will help you:—

PICKING ⟶ FACTORY ⟶ WITHERING

2 Draw a rectangle 2½-in. by ¼-in. Divide it into ten equal parts. Colour in the first seven of these. The coloured part stands for the amount of tea which comes from India: the whole rectangle stands for all the tea coming into this country.

3 Copy out the following sentences using the correct words only:—

In Britain we mostly drink $\begin{Bmatrix}\text{green}\\\text{black}\end{Bmatrix}$ tea. Black tea is from the same $\begin{Bmatrix}\text{tree}\\\text{bush}\\\text{clump of grass}\end{Bmatrix}$ as green tea but is different to look at because it has been $\begin{Bmatrix}\text{withered}\\\text{fermented}\\\text{dried}\end{Bmatrix}$ whereas green tea has not.

CHAPTER XXIV

THE MILKMAN

49 Mr. Hamblin, the Milkman.

MR. Hamblin is a milkman. He does not call at my house, but he goes to 190 others and delivers fifty to sixty gallons of milk each day in my town. Many of you would think he was a funny sort of milkman because you are used to seeing yours come with bottles on a special rubber-tyred cart, and perhaps wearing a special uniform with a white jacket, and a white band round his shiny peaked cap, too. Mr. Hamblin has a four-wheeled dray which could be used on the farm, and he wears his ordinary clothes. Some of his milk he carries in a churn from which he fills a bucket. He ladles milk out of the bucket with pint and half-pint measures into jugs which the ladies bring to their doors or leave, with saucers over them, on the doorstep. He is different, too, because he brings the milk straight from the cows he helps to milk each morning and evening. Many milkmen in the cities know nothing about cows: they only bring the bottled milk from the dairy and leave it for you.

Mr. Hamblin tells me that each morning he starts work at 5.30 with milking, and he finishes this job about 7.15. He and the other farm workers milk thirty-five cows, which give them between ninety and one hundred gallons a day. These cows are special ones, each being numbered with a little label put through its ear like an ear ring. To see how they are getting on, the milk from each cow is kept separate, and it is weighed. The weight is written down in a book every morning and evening, and each cow gives between twenty-five and thirty pounds at a time.

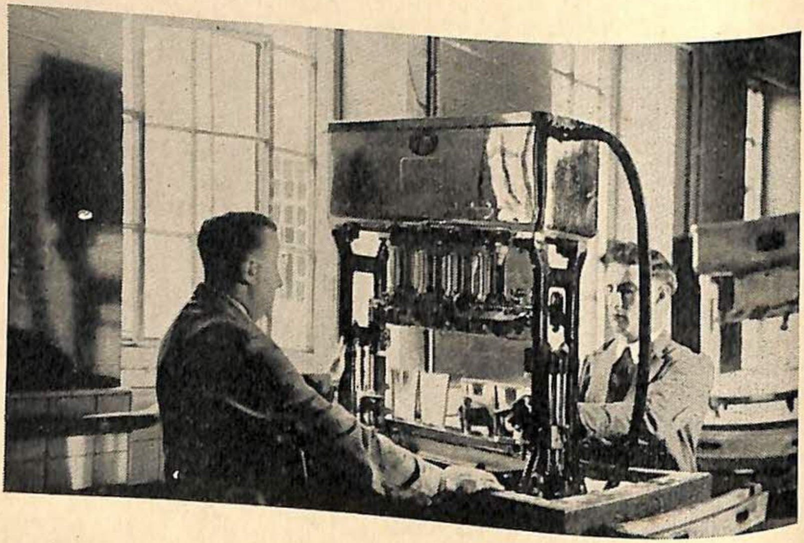
They have a milking machine, but they don't use it much because Mr. Hamblin says a good milker can keep up with a machine: if you remember that it has to be fixed up each time on another cow this may not sound so foolish as it seems. The milk is "Accredited" and T.T. which stands for Tuberculin Tested. The T.T. milk is specially free from the germs of tuberculosis—or consumption as you might call it—and can be sold for a halfpenny a pint more than the Accredited. After the milk has been weighed, it is put into the cooler because it is warm yet from the cow's body. It runs over a lot of metal pipes through which cold water is being pumped. From there it goes into another machine which fills bottles, about 800 of them, each morning.

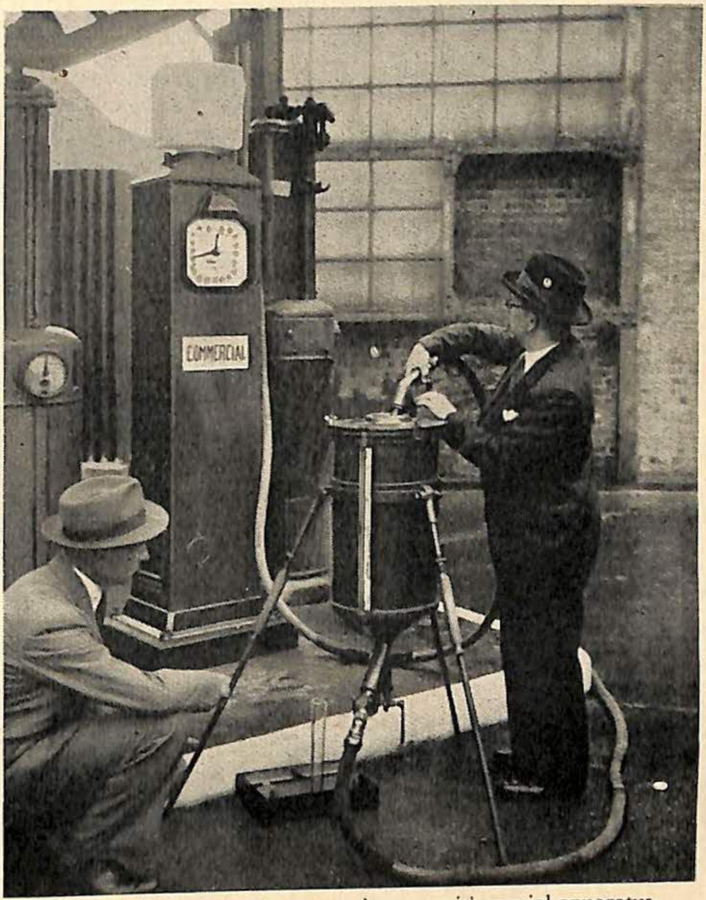
Just before 8 o'clock Mr. Hamblin starts out from the farm, with its very beautiful half-timbered house, to come to Droitwich, two and a half miles away. Then Mr. Hamblin spends the next eight hours delivering the milk. We have a number of hotels and cafés here, and he delivers quite a lot to them. Some he leaves at what used to be the British Restaurant and is now used for cooking school meals—so a good deal of his milk goes into puddings for children round about.

Sometimes while he is on his rounds a County Inspector comes up and buys a pint of milk. It may be from a bottle, from the churn or from the bucket: but whichever it is he divides it amongst three small bottles. He puts a cork into each bottle and waxes and seals it. One he sends away to be "analysed" to see it is quite pure: one he keeps himself, and one he gives back to Mr. Hamblin. If the analysts say the milk is dirty, Mr. Hamblin can have the other sample tested. If these

Inspectors keep a constant check on weights and measures to make sure that accidental or deliberate mistakes are avoided.

50 *Top left*, shop weighing scales are tested for accuracy.
51 *Top right*, coal weights are carefully checked.
52 *Below*, a publican's glasses are examined for correct measurement.





53 Inspectors test a garage petrol pump with special apparatus.

two don't agree well, there's still a third bottle, isn't there? The local policeman used to do this job, and you see how carefully your food is protected for you, don't you?

The other day Mr. Hamblin's horse ran away. You will all have seen lorries with long loads on them that reach well over the back—ladders or planks, scaffold poles or trees. The drivers have to tie a piece of white cloth to the end of such loads so that traffic following doesn't bump into them by mistake. A load like that went by, and went over a manhole in the road. The white flag at the back bumped up and down, and the horse must just have seen it out of the corner of his eye. He's quite a young horse—only five years old, and he took fright. First he jumped and knocked a churn off the dray, and the noise of that falling must have frightened him all the more. Then he ran round into the main road with all the bottles clattering in the racks. Mr. Hamblin ran after him. The dray is a wide one, and though he passed a car parked on the side of the road, the dray didn't! They ended up with bottles all over the place, and milk everywhere! It's going to cost the Insurance Company something. The crash stopped the horse though, or he might have done much worse damage than he did because it is a very busy road with double-decker buses and a lot of heavy traffic running along it.

I asked Mr. Hamblin whether there were any little things he would like to tell you about himself or his job. He thought for a minute or two, and then said, "Well, you might tell these boys and girls that there isn't really very much point in our being very careful to keep the milk clean on the farm if the things we have to put it into are dirty. We wash the cows before we milk them, and we all wear white gowns while we milk: the vets. do a blood test on the cows every month, and yet people let us put milk into jam jars and saucepans, or even frying-pans where it must collect dust and dirt!

"You might tell them, too," he went on, "that bottles are expensive, and that though we are careful to steam them and clean them thoroughly before we use them again, it does help us if people will swill them out properly before they return them."

Mr. Hamblin works seven days a week in all weathers, hail, rain and shine. He has no one to help him, and so it is very difficult for him ever to get a holiday. Each day his work starts at 5.30, and it finishes twelve hours later after the evening milking. He gets about £5 10*s*. 0*d*. a week. His cottage costs him 4*s*. 11*d*., but it has no gas or electricity, only oil for lighting and cooking. Of course, he gets some things cheaply from the farm. But, for all that, he quite likes his job. "I meet so many different people," he said, "from the poorest to the richest; they all need milk and it's interesting getting to know them." Mr. Hamblin has a grip like a vice when you shake hands with him: it made me wince. "It's all that milking and carrying he does," I thought as I went away.

THINGS FOR YOU TO DO

1. If you know a milkman will you ask him some of the questions I asked Mr. Hamblin, such as "When do you start work?" "How many gallons do you deliver each day?" "How many customers do you serve?"
2. What does the milkman do to make sure that the milk is free from dirt and germs when it is sold to your mother?
3. Make a list of things you should and should not do if you want to help the milkman to do his job properly.

CHAPTER XXV

HUNGRY?

WHAT would you like to eat? Are you "nice" hungry? The chances are you will choose sweets, some kind of sugary thing anyway. And quite good, too. You need sugar, and something which is very like it—or so the chemists say—starch. You will find sugar and starch in many of the things you eat each day. There is a lot of starch in bread and in potatoes, and you probably eat more of these than anything else just now. The starch is changed into a kind of sugar inside you, and gives you energy. One way in which you can tell whether food has starch in it is to put in or on it one drop of iodine; if it changes to a blue colour starch is there.

You don't only eat bread and potatoes. Sometimes you have meat. This is to help you to build up muscles, and to put back what you use up in your body by moving about. The third thing you have in your food is fat of some kind. It might be dripping or margarine; it might, that is, come from an animal or from nuts and seeds of various kinds. You have all heard the story that Eskimos will eat tallow candles as you eat a stick of rock. It's not far from the truth: they do eat great quantities of fat to keep them warm, and this is what it helps to do for you, too. In winter you generally have greasier things than in summer. You need some of each of these three things—starch and sugar, meat and fat every day. These are called by longer names: starch and sugar and other things like them are called carbo-hydrates; meat is only one example of material called protein; and fats, well, fats are simply fats.

Besides these you need quite small amounts of those things called vitamins. These, as you probably know already, are usually called by the first letters of the alphabet. If you have too small quantities (or as we should say it—a deficiency) of these, your body begins to go wrong. Before 1912 when Sir Frederick Gowland

Hopkins first found vitamins, people suffered through failing to eat enough of those foods which would give them the vitamins they needed. Even to-day many people do not get enough, partly because they don't know, sometimes because they cannot afford. You can, you see, have a full stomach, and still not be properly fed.

A deficiency of Vitamin A causes night blindness. This was important to us during the last war when everywhere was blacked out, and it was especially important to night fighter pilots. The cure was said to be to eat plenty of carrots! A deficiency of Vitamin B causes a disease fairly common in the Far East, called *beri-beri,* which causes first the legs, then the body of the person who has it, to swell as if water were gathering. This occurs because many of the people there live almost entirely on rice from which the vitamin has been taken away with the husk.

Deficiency of Vitamin C causes scurvy. The glands of the groin swell up, the skin goes blotchy, and teeth begin to come loose. It is the result of having no fresh fruit and vegetables. It was especially serious in the days when sailing ships made journeys of many weeks without touching land, so that the sailors lived largely on salt pork, hard biscuits, dried beans, and peas. It is quickly cured by drinking lime, lemon or orange juice. All sailing ships began to carry barrels of lime juice when this was found to be a cure long before the reason for it was known. In a mild form, scurvy was very widespread during the winter months all through the long centuries when fresh green food was difficult to get, and the milk which would have helped to make up for it was scarce because the people knew nothing of clover and root crops on which to feed cattle in winter time.

You will have heard already in this book a good deal about diseases which come from a deficiency of Vitamin D. Without it, bones become soft and teeth decay more easily. Fresh vegetables and the outer part of wheat grains have Vitamin D in them, and cod and halibut liver oil are especially rich in it. Our own bodies also make it when sunlight plays on them. If you are cut off from the sun and from foods which have Vitamin D in them you begin to suffer from the disease called rickets. It is very rarely seen in a bad form to-day, but it was especially widespread during the Industrial Revolution, and in our slum areas a few years ago. Many people grew up twisted or bow-legged and with bad teeth. A deficiency of it also causes people to catch other diseases more easily.

You have no cause to worry yourselves about any of these diseases. You have enough milk every day to give you the vitamins you need: milk has them all in some amounts. Then you have well mixed food with some raw fruits or vegetables now and again. You get some sunlight. Oh yes! you are strong and healthy enough, I expect.

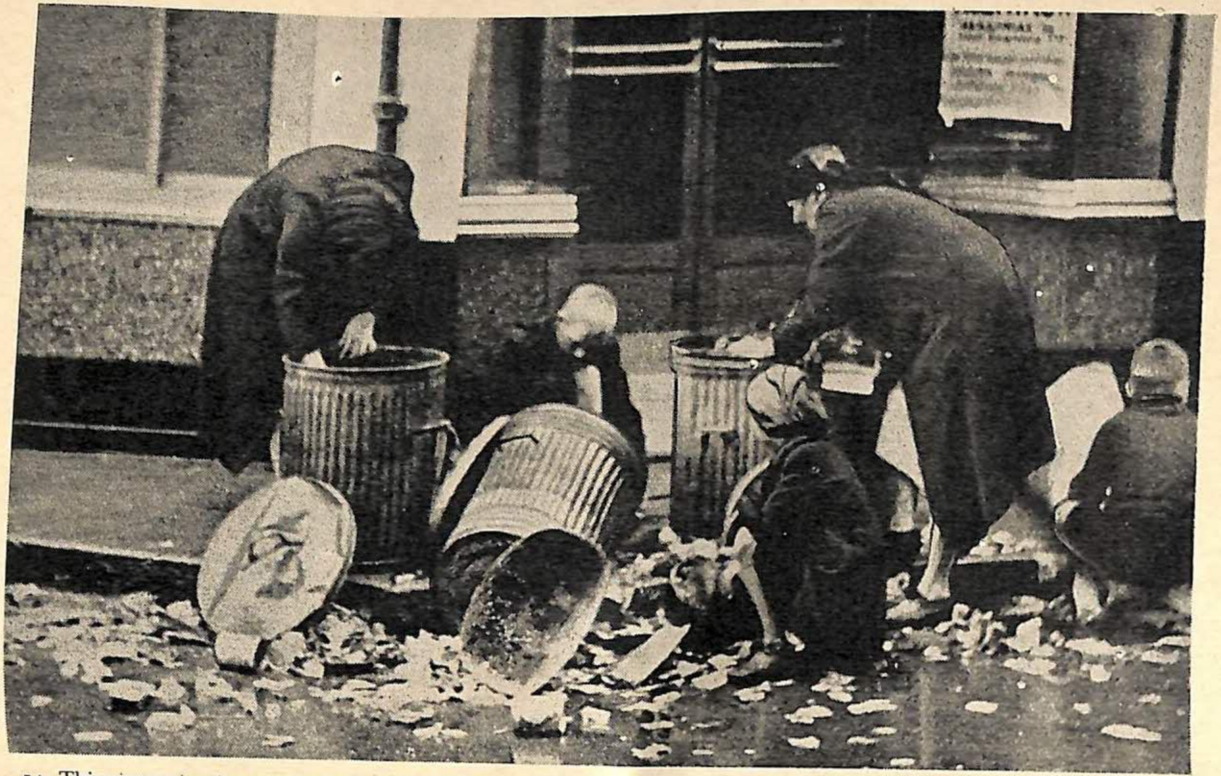
There is one thing you might remember: when you grow up don't keep buying the expensive patent and vitamin rich foods which are advertised in your papers. If you don't feel well go to your doctor and let him tell you what you need. Many people spend a lot of money they cannot easily afford buying things they don't really need. The patent foods won't do you any harm, but it is doubtful if they will do you as much good as plain well-mixed ordinary food and plenty of good clean milk.

If you leave a very small amount of iodine in your potatoes, or on your bread after you have tried them for starch, it will not do you any harm because there are many minerals of which you must have small quantities, and iodine is one of them. Another of these is found in chalk, but don't eat that on the blackboard ledge; another is iron, but don't go round looking for a nice plateful of nails. Still another is phosphorus, but don't suck matches, which will harm you. There are others, but these will do for now.

Food, coal and petrol are, in a way, different kinds of fuel. Scientists measure fuel by how much heat they can get out of a pound of it, and the measure they use is a calorie. A pound of coal would give 3900 calories; a pound of petrol 5100 calories. Bread gives 1200 calories to the pound, and apples only 210: so you would have to eat nearly six pounds of apples to give you the same quantity of heat, or energy, as a pound of bread. Each day *you* need about 2500 calories: if you were lying in bed you would need many fewer: if you were running errands all the time or outside playing, you would need perhaps a few more. That is why miners and men who do heavy work get bigger rations than you do just now, and why, when we can again buy all we need, those workers will still have to have more food than you.

At the moment there are millions of people in Italy living on 1300 calories a day—about a half of what you should be having. It is about the same in Germany, in Greece, and in some other countries which have been damaged by the war. Before the war began these people would usually have had enough to keep them healthy: leaving people homeless and starving are only two of very many reasons why wars are silly and hateful. Now, because they get too little, diseases which they would easily have thrown off before, quickly become very catching. We not only have to send foods but also doctors and medicines to help them. That is partly our duty and partly because we need to stop epidemics before they have a chance of spreading to us (*see* p. 110).

Some peoples in the world have never had enough to eat. Millions in India and China have been too poor to feed properly. They could sometimes fill themselves with food and not feel hungry at all, but still not be properly fed. If you had to live on apples, you would find it difficult to eat enough to give you the number of calories you needed: if you lived on rice you would also find it difficult to eat enough to give you the number of calories you needed. Besides, you would not be getting the different kinds of food you needed. That is why you sometimes see pictures of nearly naked small boys and



54 This picture is taken from the film *Greek Testament*. This is what war has done for many millions of the people of Europe.

girls of some hot countries who look quite thin everywhere except in the middle: they have to eat so much to get the same energy as you do from much less food.

Clever men have been at work to see how food from countries with plenty can be brought to those which have too little but whose people cannot afford to buy any more.. Farmers in the countries which are well-off must be paid for their work so that they may live, yet the people whose need is greatest cannot pay. It is to be hoped that someday soon we shall find an answer to this difficulty. The Food and Agricultural Organisation of the United Nations is trying not only to wipe out real starvation but also to give everyone in the whole world, whether he can pay for it or not, enough of the right kinds of food to keep him strong and in good health. This is a great and difficult job to do, but we must try, and go on trying until we succeed in doing it.

THINGS FOR YOU TO DO

1 Make a table of three columns like the one below. Look at the top line of the table: then fill in the other lines with the right words.

Kind of Food	Found in	Work done
starch	bread	Gives energy
protein		
fats		

2 Rewrite these sentences and fill in the missing words.
   (*a*) Lack of Vitamin A may cause . . . . .
   (*b*) A deficiency of Vitamin B may cause . . . . .
   (*c*) Too little Vitamin C may cause . . . . .
   (*d*) Rickets is caused by a deficiency of . . . . .

3 What are those countries which have sufficient food trying to do for those which have too little ?

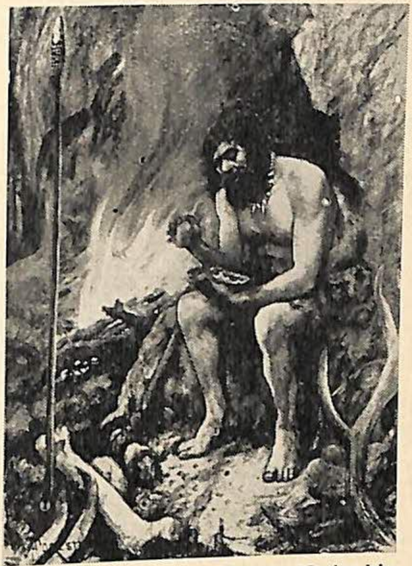
CHAPTER XXVI

GATHERING FOOD AND HUNTING

If you look at the skeletons of a chimpanzee and a man you will not find them very different. That does not mean that men began as monkeys, but we can guess that thousands of years ago the first men looked rather more ape-like than you and I do to-day. These first men were probably not as tall as some of us, but were much broader and heavier than we are. Their arms were longer and their bodies stronger than ours. They had smaller heads, smaller brains and low foreheads, above thick and jutting eyebrows. Their teeth were bigger and grew in jaw bones which stuck out from their faces further than ours do. Their bodies were covered with coarse hair. Though generally they walked upright, perhaps occasionally in running uphill they would reach down a long arm, helping themselves along with the knuckles of partly clenched hands. They had still to learn to speak in something more than grunts, growls and senseless chattering. They had still to learn how to make a fire. They had no clothes, and their only weapons and tools were sticks and stones, not shaped or sharpened in any way.

What did they eat? It depends partly upon where they lived, but they certainly collected seeds and berries, fruits, grubs, perhaps wild honey, shell-fish if they lived near the sea, birds' eggs and small animals. Put your tongue against your front teeth. You have four which make a fairly straight edge, but on either side of those is a big tooth with a sharp point. This is called a "canine," which means "like a dog's," and if you look at your dog's teeth you will see that he, too, has two extra long teeth, one on each side of his jaw. We also have the same kind of teeth in the bottom jaw. These are found in meat-eating animals, and we know that the first men had strong long canine teeth.

As time went on these men became more and more



55 An Old Stone Age Man. Notice his spear and how the stone head is fitted to the haft. Notice too, the bones and stag's antlers showing how successful his hunting has been. What is he wearing? Of what do you suppose his necklace is made?

successful hunters. They invented tools and weapons: they learned to sharpen stones and to point sticks, to use bone and ivory. They may have made bows and arrows. They laid traps for bigger animals by digging holes for them to fall into, and covering them over with a thin framework of boughs and twigs. They made traps of logs which would fall on the animal trying to get at the bait. They probably began to dress in the skins of these animals, and we may guess that in this part of the world they partly cooked some of their food. From gathering, then, they moved up to hunting, though, of course, they still picked up any food they could while they hunted. For many thousands of years men lived like this in our own country, hunting, fishing and gathering wherever they could, and there are races of men who still live like this to-day.

Such are the Pigmies who live in the great forests of the River Congo valley. These people grow no crops but they are most skilful trackers and hunters. With bows only eighteen inches or so long, and straight twigs with poisoned tips for arrows, they seldom miss birds or small monkeys fifty or sixty feet away from them. They catch larger game, too, in pits—even elephants and hippopotami. They poison fish and gather wild honey. The women dig for roots and collect berries, nuts and fruits. Most of the food is eaten raw and because they have no means of keeping it fresh, they, like other hunters, eat as much as they can when they have made a kill. The Bushmen of the Kalahari Desert are also hunters and gatherers. They dig for roots; they eat insects such as white ants and locusts. They catch frogs and snakes and even kill with stone-tipped arrows, birds as big and strong as the ostrich and animals as swift as the antelope. The Australian blackfellow also lives very much in this same way.

The kind of game, fish or fruit they get, depends upon the country in which the hunters or gatherers live. You would not expect to trap elephants in England: you would have to look somewhere else than in an English wood if you wanted to find bananas growing. So the Eskimo who is a hunter has very different food from the Pigmy of the River Congo who is a hunter. In the Arctic wastes the Eskimo catches seals, birds that live on fish, whales, fish and so on. He gets no fruit in the winter, and perhaps only a few berries in summer, yet he keeps healthy. How? Partly because his food is often eaten raw and the vitamins in it are not destroyed by cooking. The Pigmy on the other hand collects fruit in the forests in which he lives and exchanges the meat of animals he has killed with Negroes who have gardens and grow yams (a kind of potato), beans, bananas, and so on. So he gets a number of different kinds of food, which are more suitable for the hot climate in which he lives. He needs very little fat to keep him warm, and the animals he catches are not fat like the seal, the walrus and the whale of the Eskimo lands.

Whoever they are and wherever they live, the lives of these hunters and gatherers are always uncertain; they never know where their next meal will come from. Always they must be on the move, following game or going where game seems most likely to be.

Some hunters, however, were much better off because the animals on which they lived moved in great herds, and therefore the people could be fairly sure of food.

56 A buffalo or bison. Great herds of these animals once roamed over the prairies. Notice the grassland in the foreground of the picture, and the mountains towering in the background. So many of these animals were killed that they were in danger of dying out altogether, and they are now protected in sanctuaries.

Because there was plenty, many people would live together in a group. Such a people were the Indians of the great grassy prairie lands of Canada who followed the movements of herds of buffalo (or bison). These animals, which are like great shaggy bulls at the front, and are slender and short-haired at the rear, provided the three most important things the hunters needed—food, clothing and shelter, or something to eat, something to wear and somewhere to live. They cooked the flesh of the bison, or cured it for keeping by drying it in long strips. This dried meat was called pemmican. With the skins they could make beautiful warm robes, and the skins, sewn together with sinews, were used to cover a wooden frame to make the kind of tent you may call a wigwam. Beds were made of bison skins laid on small branches. After the Spaniards had brought horses to North America, the Indians began hunting the bison on horseback. They were expert riders, though they did not use saddles or stirrups or bridles, but guided their horses by pressing on their sides with legs or heels.

Now the strange thing about the Indians is that they never tamed the bison nor any other animal useful for food. Even the animals they rode, and which did heavy work for them, were brought into the country. But to you and me the next step would be to tame the animals, so that we could drive them where *we* wanted, and could always know where they were to be found. In this way, we could be sure of our supplies of food. Men in the Old World did this quite early in history: they tamed or domesticated goats, sheep, horses, asses, cows, poultry, and so on. Some of them they took with them to the New World after its discovery by Columbus, and there to-day, because there are fewer people and greater spaces, we find millions of these animals pastured to produce food and leather for the many people bunched in the smaller areas of the Old World.

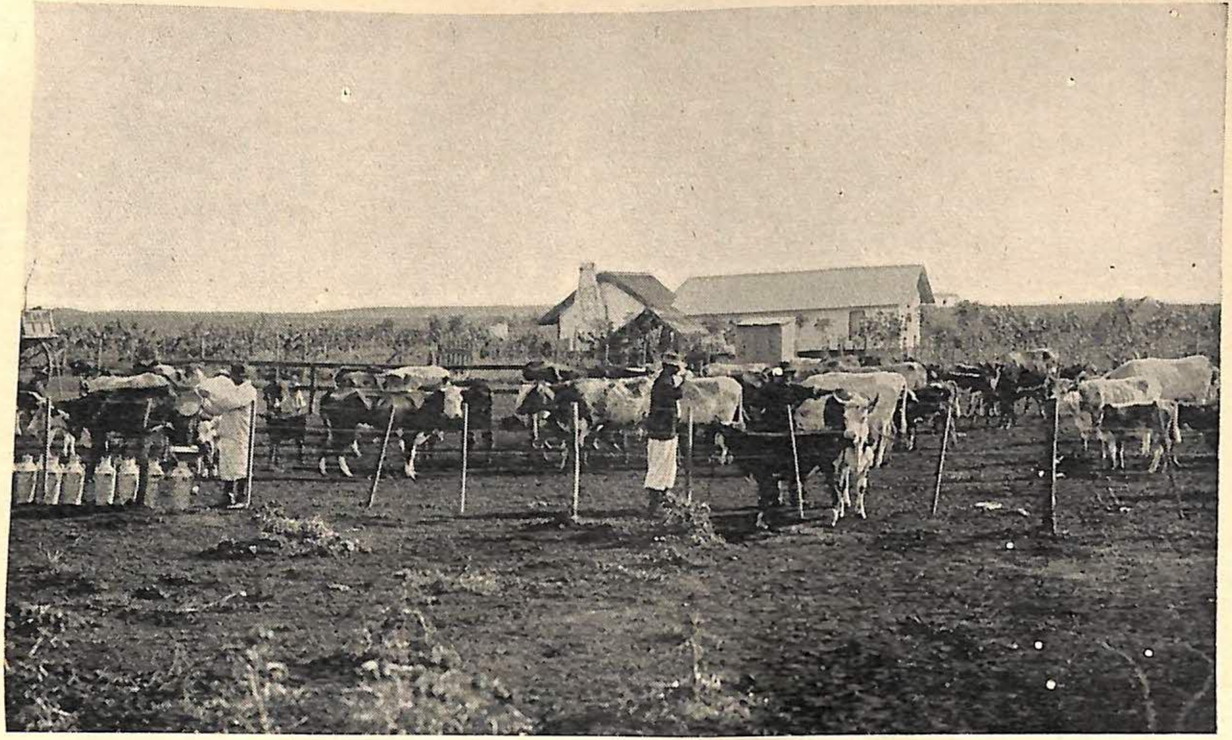
CHAPTER XXVII

THE LAND OF SILVER

THE Spaniards who went to South America in the early part of the sixteenth century went there, so it is sometimes said, for the "Three Gs"—to get Gold, to win Glory, and to spread the Gospel. They found gold and silver in the high mountains of the Andes, but when they came to look for them in the land they named Argentina or "Land of Silver" through which flows the river called the River Plate or "River of Silver" they found—none at all. Had they only known, there was in that country something much more valuable than all the gold and silver in South America: there was a deep, rich, almost stoneless soil which produced real wealth.

Gold and silver are metals which you can wear. You have gold rings and silver bangles, but, as metals, they are much less useful than iron. Gold and silver, apart from their beauty, are only valuable because they can be exchanged for useful things. The value of your sixpence is that it will buy you a seat at the pictures or sixpennyworth of sweets, or three twopenny comics. Unless you could spend it for something you wanted it would be no good to you. Perhaps you could knock a hole through it, and use it as a washer! There is much more money in England to-day than there was before the war, but we are certainly not wealthier. The real wealth of a country is all the things it makes or grows, things we can use, or things we can eat. In Argentina this great wealth was there for the taking: the Spaniards at first overlooked it in their search for gold and silver.

Take a pair of compasses and your atlas map of South America. Using the scale of the map, open the compass legs to 400 miles. Put the point on Buenos Aires, the capital city of Argentina. If now you pretend to draw a circle 800 miles across, you will see that over the land the circle nowhere takes in high land. If you travel across the Pampas you will see neither hills nor

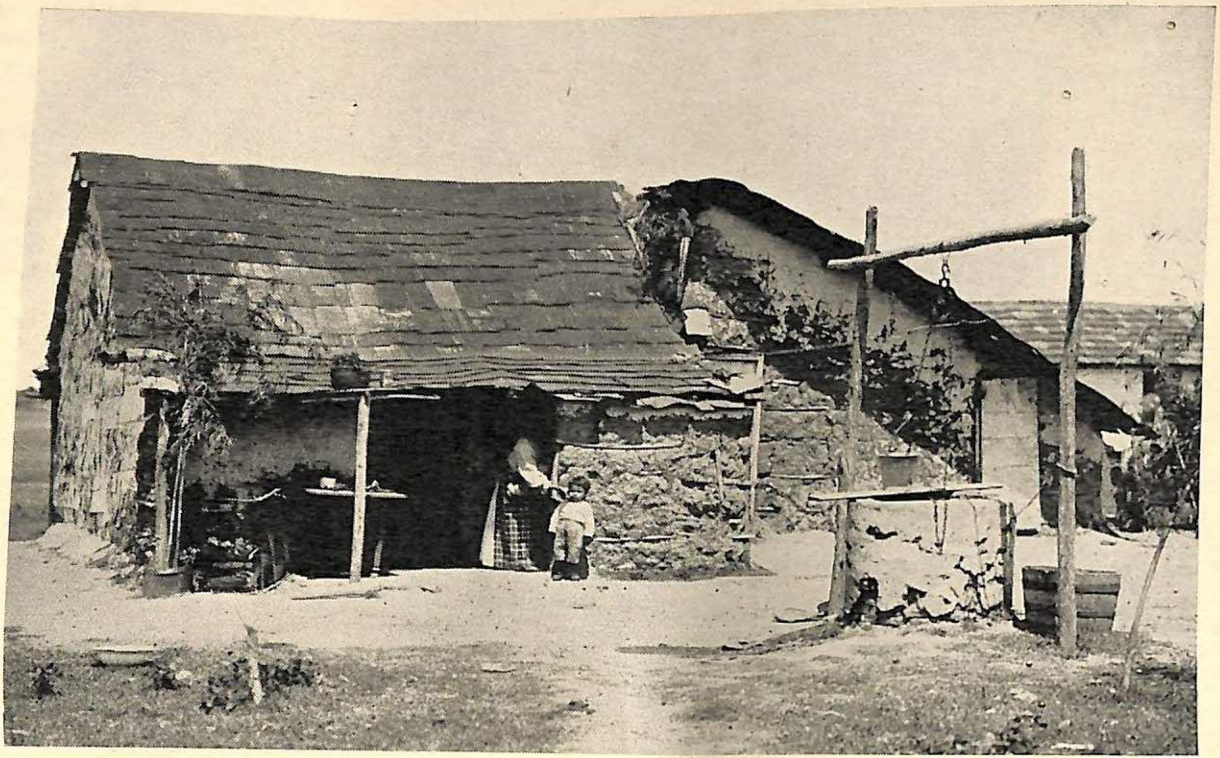


57 Some cattle in Argentina are now being kept for milking. Here is a view of the Pampas. Notice the absence of hedges and trees. Are the men wearing clothes like our own? What kind of cattle are some of these?

mountains: this land is much, much flatter than your land: it is one of the flattest plains in the world. The flatness is not even broken by clumps of trees, as it might be in this country, for this is a sea of grass. As in Frank's sheep station, there are no hedges, only long wire fences stretching away into the distance. Here and there is a farmhouse or estancia, as it is called, and a cluster of smaller huts. The estancia is a single storey building usually built all the way round a square courtyard or enclosed garden. Perhaps in this there is a fountain and flower beds. Outside the house trees will often have been planted to give some shade: they need to have long roots to reach down to the water which they tap deep in the ground. This deep water is pumped up by a tall windmill standing on a steel scaffolding like an electric pylon.

The houses of the workers are made—can you guess of what ?—of the materials which can be found nearby. Because they are very small they need no heavy beams, and because rain is scarce, and cold never very great, they can be quite flimsy. Yes, they are made of sticks plastered over with mud and—what of the roofs ? Slate ? No. The roof is a thatch of straw.

Many of the people of this wide open country live by keeping cattle, but they have taken at least three steps more than the Indians of the Prairies. First, the cattle are domesticated. They are tamed, and looked after by the owner of the estancia and his men, the gauchos. Secondly, the cattle have been carefully bred so that to-day the herds which stand knee deep in the waving sea of Argentina's grass are some of the finest in the world. We shall see later that we, in this country, were the first to take care with breeding animals so that only the finest had young ones, and it was, and is still, from Herefordshire that the finest bulls are sent to Argentina to improve the herds. Do you remember seeing on the Bovril (which, by the way, is the name of a small town in Argentina) adverts the head of a bull, with a white



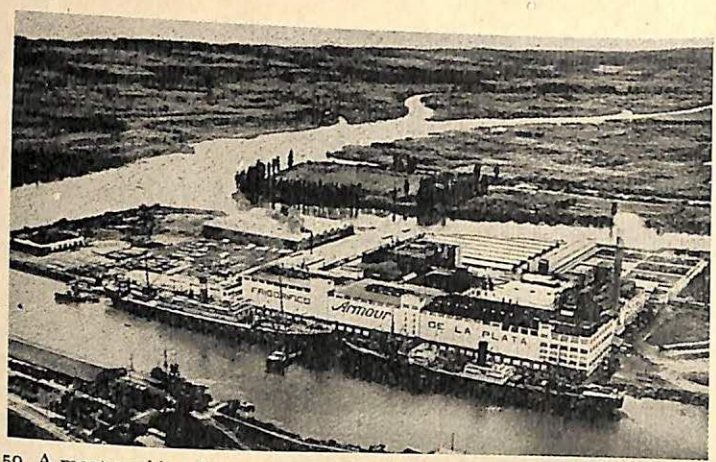
58 A peasant's hut on the Pampas. How has it been built? Where does the peasant get his drinking water? Do you notice anything special about the tree growing beside the house?

face and short sharp horns? That is a Hereford, one of the best breeds of cattle in the world.

The third step taken by the stock farmers of the Pampas has been to improve the grasslands themselves. The grasses which grow wild there are not as good for fattening cattle as a kind of clover, called alfalfa. This plant has long roots, and reaches down towards the moisture, deep in the fine soil. The ranch owner does not usually get his men to plant this for him; instead he allows a poor family to plant two or three crops of wheat on a part of the ranch which he lends to them rent free. He may even supply the seeds and the tools for them to be able to do this. Then the ranch owner takes back part of the crop to pay for the seeds and the tools. At the end of three or four years the wheat grower plants alfalfa, and moves on to some other part of the same ranch, or to another one, and does exactly the same again.

The beef cattle are driven from pasture to pasture as the need arises, by those very fine horsemen, the gauchos. These men, like the boundary riders in Australia, mend the fences, and tell the owner when a pasture has been eaten off. Usually in the autumn or early winter, they collect cattle which are to be sold, and drive them along the straight, wire-fenced roads to the railway station. You will see that, because the land is very flat, and there are very few streams or rivers in Argentina, railways have been very easy to build and there are many of them. The beef cattle are carried down to Buenos Aires where they are slaughtered.

Every part of the animal has some use. The bones, hooves and horns make glue. The blood can be made into manures of various kinds. The hides are tanned, and made into leather: this is where your shoes may have started! These things are really by-products because what is chiefly wanted is the meat. It shows again that much that would be wasted in small quantities is valuable when there is a lot of it. The meat can



59 A meat packing factory on the River Plate. The river is slow running and able to carry ocean going merchant ships. The one on the left of the picture is going to move. How do you know this? What English words begin with "f-r-i-g"?

be chilled, frozen or canned. Generally Argentine meat is chilled: it will keep quite well in the hold of a refrigerator ship on the journey to England. This lasts a little over three weeks as compared with the journey from Australia of nearly six weeks.

Before the days of refrigeration some salted beef was sent out of the country: but the most important things produced by Argentina were hides and tallow; these would keep on the long sea journey, at first in sailing ships, and later in slow steam vessels. At this time early in the nineteenth century, we needed to bring much less food into our country because we grew or pastured so much more of our own, and the number of people was so small compared with the present day. Later in the century our own country had become the workshop of the world: our people grew a smaller part of their own food, but had to exchange articles made in the factories for food. Refrigeration in ships began to be possible at this time and the flesh of the cattle, which before had been left to rot or to be picked by the birds, became the most important product of Argentina's grasslands.

If Red Indians had lived here, and had followed untamed and unimproved animals about on the natural grassland, there would have been nothing to export from Argentina. Men have stepped forward then from the stage of the Red Indian hunters to the careful keepers of specially bred cattle on grassland improved by the planting of alfalfa.

A good deal of our meat, and much of our wheat, too, comes from Argentina. If there are strikes in the meat packing works and docks of Buenos Aires the sending of our food to us is held up. It may be that the workers there are being poorly paid: it may be that theirs are only silly complaints: but whether they are right or wrong to strike, it is not only they and their families and their country which suffer in the hold-up of the work; we, a quarter of the way round the world have to go short of something, too. You see, everybody in the world helps everybody else: we all belong together, which is why we need to think very carefully before we do certain things, and decide on certain kinds of action.

From My Scrapbook

TOWARDS ROSARIO

A SWISS gentleman teaching in the Argentine some years ago, decided that he would ride on horseback through South America. His name was Tschiffely, and the book he wrote about his travels was called *Tschiffely's Ride*. On page 5 of his book, he wrote the following description. Will you find out where Rosario is in Argentina?

"Between these two towns, and indeed right on to the Andes, the country is dead flat. As far as the eye can reach there is nothing visible but large herds of cattle grazing in the "potreros" (paddocks) or vast expanses of crops, chiefly wheat and corn. Wire fences are everywhere, trees being conspicuous by their absence except around the estancia houses, and in a few isolated patches of "monte" (scrubland). The roads are either very dusty or very muddy, being simply dirt tracks bordered by wire fences and running dead straight from one right-angled turn to the next, a curve being practically unknown. In the neighbourhood of a village, skinny horses and cows belonging to the poorer inhabitants pick up a scanty living from the grass on the roadsides . . . . During the harvest season one frequently sees grain carts drawn by an unlimited number of horses. The official team of six or eight is arranged in a fan-shaped formation; but when the roads are heavy as many extra horses as are available are attached to any part of the vehicle to which a rope may be tied . . . It is heavy work for the animals, but they are for the most part willing labourers."

Tschiffely's Ride, p. 5.

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In what way is this different from the means by which the Canadian farmer would get his wheat to the railway? Why are the roads not surfaced like our own? Why are windmills needed? Why are there few trees? What is an "estancia"?

THINGS FOR YOU TO DO

1 Are wild fruits or herbs gathered near your home? What are they used for?

2 Did hunters or herders ever live near your home? How do you know? Did they leave any clues which have helped us to find out? Visit your local museum and ask to see any tools they may have left.

3 Draw a plan of an Argentine house. Draw a picture of what you think it looks like from the front.

4 Rewrite the following, filling in the missing words:—

Great herds of . . . . . are kept on the . . . . . , the grasslands of Argentina. They are very flat and lie within . . . . . miles of . . . . . , ... , the capital city. . . . . ., a kind of clover, is often used for fattening the cattle. This is usually planted after . . . . . has been grown for . . . . . years on the same land.

5 Make two rectangles $2\frac{1}{2}$-in. long and $\frac{1}{4}$-in. wide. Divide both into $\frac{1}{4}$-in. squares. Against the first, write Beef: against the second, Wheat. Colour in the first six of the squares in the Beef rectangle and the first half square in the Wheat rectangle. The coloured squares stand for the beef and wheat sent to this country from Argentina; the full rectangles stand for all beef and wheat coming to Britain.

CHAPTER XXVIII

GROWING FOOD

How man first found out that seeds thrown on to the ground later grew into the kind of plant from which they came, we shall never know, but most likely it was by accident. He or his wife, or his children, threw down by the mouth of the cave where they lived some pips or stones of fruit they had been eating, and found later on that they had taken root. Then it became possible for men to save themselves the trouble of going in search of food in the forests or thickets: they could be sure of a steady supply of food close to the place where they lived. You may be sure that they did not straight away give up hunting, nor did the women and children stop collecting the eatables they could not easily grow. Perhaps, too, at the same time, they kept some half wild animals for meat and milk.

The great thing that had happened was that food supplies were now fairly sure. Men could begin to live in the same place for some little time: they were no longer compelled to move on and ever on in search of game. It was not until they had settled that they had time to learn the arts of making clothes and pottery and baskets, finer houses, weapons, and tools with which to make their lives safer and more comfortable. Then, too, because they fed on what quite a small area would produce they could live closer together for protection and help. People began to live in groups, and to build small clusters of dwellings in forest clearings, or on river banks, wherever suitable land for farming and a sure water supply could be found. Marriages took place between the children of the different families until they were all related to one another. The men and women met difficulties together and so began to feel that they belonged to a special group or clan. If this grew greatly in size by marrying in with other groups a tribe would be formed, and the people belonging to it would work and fight together.

60 The herder who kept cattle. He knew how to cook his food, how to make rough shelters, and how to make pots. He still hunted in the forests and collected wild fruits and berries. A handful of people could live together when food supplies were fairly certain.

The Kaffirs, about whom we have already spoken, are at this stage of growth. The men and boys look after the cattle while the women do the work of tilling the ground. The cattle are kept at night in the ring-like enclosure in which the kraal also stands for protection against wild animals. In the early morning the cattle are milked, and are then driven out on to the open grassland where they are looked after by the boys. There are no fences, and no hedges here except perhaps round the gardens. All the cultivating is done with a hoe rather like the tool your father uses for hoeing up potatoes, only narrower. The Kaffirs have learnt to make these hoes with iron heads and wooden shafts. They plant millet (the seed you give to cage birds like budgerigars), monkey nuts, beans, and especially maize which the South Africans call mealies and you call Indian Corn—the corn you give to fowls and pigeons. Throughout the growing season the women keep the ground clear of weeds, and with the help of the children, scare away the birds which would eat the crops. When the crops have been harvested whatever is not needed straight away is carefully stored in baskets in small store houses. Millet and maize for use is threshed—that is, the grain is broken from the husk by beating it with sticks on a

61 More people could live together when men had learnt to sow and harvest crops. Notice the number of huts in this drawing. You will see that some men were still hunters: here they are bringing a stag back to their homes.

hard floor. Before the grain is eaten it is ground into a kind of coarse flour, and this is cooked up over a small fire into a sort of thick porridge. The women use clay pots for cooking.

In the long period before written history, man in this country learnt to use for his weapons and tools, first stone, roughly flaked and shaped, then polished stone, followed by bronze, and at last iron. In the New Stone Age when he had learnt to polish and grind his stones, man in England was both a herder and a farmer. He kept flocks and he grew crops. Probably the division of labour between men and women was much the same then as it is to-day among the Kaffirs. The crops grown in England were, of course, different from those of the Kaffirs' fields. In place of maize and millet there would be wheat, oats and barley. At that time no one in the Old World—Europe, Africa and Asia—knew anything of maize or potatoes, both of which were bought from the New World, and that could not have been before it was discovered by Columbus in 1492.

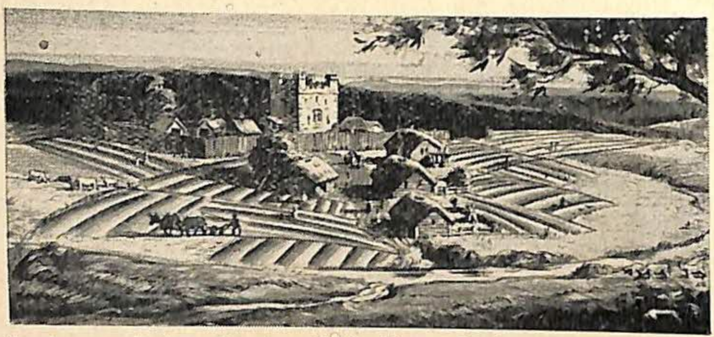
When the Romans first came to this country they found a number of tribes holding the land. Sometimes tribes fought against their neighbours, but the Romans were a strong military power, easily able to stop this warfare between them. The Britons, as the defeated people, were made to work for the Romans. Farm land was divided up by the Romans into estates each owned by a landlord. These were then worked by the people who before had been free to work their own land as they chose. In those days the country was made to grow good crops of wheat. Some of this was taken to feed the Roman soldiers and officials who were living in Britain, and some of it was sent out of the country—enough to earn for it the title of the " Granary of the North." The Romans also brought to England for the first time hornless sheep, geese, fowls, and some new kinds of fruit trees such as pears and cherries.

Some time after the Roman Empire had become too weak to keep troops any longer in Britain, warlike people from across the narrow Channel, and from over the North Sea poured into the fertile country, driving the Britons westward into Wales and Cornwall. Again the land was divided amongst the conquerors, and the men who had come in the service of their chiefs stayed under his protection to farm his fields.

The Normans, who came in 1066, found the country divided in this way when they arrived. They, it is true, helped to fix the manorial system, as it is called, firmly upon the land. They too found that the "pattern" of farming known as the "three field system" was already in use. For many hundreds of years these systems continued to decide how we grew our food, and how it is still grown in one place even to-day.

CHAPTER XXIX

THE THREE FIELD SYSTEM IN THE YEAR 1086



62 A general view of a three-field village. Notice very carefully the various features which are described in this chapter—the wastelands around the great common fields, the thatched cottages, the forest lands, the strips in the fields and so on.

I WANT you to come back with me through the centuries to the year 1086. Let us imagine that you and I are two of the men sent out by King William to visit a small village somewhere in the Midlands to make a part of the Domesday Survey. Our story might read something like the following :—

We sit easily on our horses, resting them after their long climb up to the ridge. From this height we overlook the next valley cut by a small bright stream. Beyond the stream stands the small village of Braxton, with its forty or so roughly built wooden or wattle one-roomed cottages. The thatch in the early sunlight is as darkly yellow as a ripe pear. The cottages stand on each side of a rough track leading along to the stone-built church with its square tower and dim narrow windows. Beyond that again we can make out the Manor house, a fine strong, stone building with one great hall where the lord of the manor and his household work and sleep and eat.

Just here the forest is thick oakwood in which the thin and hardy swine root for food or, in the autumn, gorge themselves with contented grunts on the smooth brown acorns. The swineherd and his snarling, wolfish dog look after them. In this forest, too, the lord of the manor often comes to hunt the deer which are still quite common in England to-day.

Around the village the land is divided into three great fields. The one to the northward is deep in waving wheat. The one nearest to us this side of the stream is planted with oats already beginning to turn pale yellow. Beyond the stream, and to the south of the village is the fallow field on which no crops have been planted this year: cattle are grazing in it, and occasionally, as we see, moving a few steps to more juicy clumps of grass or weeds. This field is left fallow so that the soil is not robbed of all the foods which enable plants to grow well, for the only manuring the fields get is from the droppings of the cattle as they graze.

Riding on through leafy pathways of the forest on our rested horses, we come all at once into the open waste land in which the village and its three great fields are set. Here the cows of the villagers will be pastured when the little food they can find in the fallow field has been eaten and before the hay has been carried from the meadows. Here, too, pigs root and poultry scratch. The village children will gather blackberries and nuts from the bushes in the autumn, and some of the wild herbs will go into the stew pots of the cottagers.

As we come closer to it we begin to see that the field under oats is not just one great flat stretch but is divided by balks or unploughed grassy ridges into a large number of strips each a furrow-long (a furlong) in length and four rods (or one chain) wide. Roughly then, we might say that the strips are ten times as long as they are broad, and have an area of about an acre. Each strip belongs to one man. Let us ask this fellow climbing the slope leading to the forest to tell us about it.

He is a tall heavily built man with a head of dirty long yellow hair, with bits of straw and bracken in it, for he has not combed it now for some time. He is wearing a sort of long shirt made of coarse rough cloth reaching from his throat to his knees. The middle of this loose shirt is held in with a broad leather belt. He has sandals of hide and leggings of thin leather bound to his calves. His knees are bare, and he wears no cap. He is a rough-looking fellow able to speak only Anglo-Saxon; we shall have to forget our Norman French for a while.

"Yes," he says, after we have stopped him and told him what we want to know, "I have only thirty strips, ten in each field scattered about"—from which we knew he was a villein, better off than the cottagers who only had four or five strips, but less well off than the freemen who might have up to 100 strips in some cases. When we ask him why the field is divided into strips he looks into the distance and sucks his teeth as much as to say, "You know the answer to that one yourselves." Actually he says, "So that I don't get all the best land, it has to be divided between me and my neighbours, and as we've only one plough in the village, and we lend our oxen to pull that, if my land were all in one piece, I might get it all ploughed before my neighbour's—or after, which would be worse."

We ride on again and sometime later we cross the stream by the stepping-stones at the little gravelly ford and pass, on our left hand, the great wheat field also divided into narrow strips. Each cottage has a small garden growing some vegetables, but these folk live so close to the wild flowers and have so little time in which to do all the work in the fields besides the two or three days' work on the lord's domain, that they cannot bother to cultivate flower gardens. Dog roses bloom in the thickets; pear and apple blossom shed snowy petals in the spring; bluebells carpet the open woodlands with a faint purple mist early in the year. Who wants flowers in a garden?

Along the rutted unpaved road the sound of our horses hooves is muffled in the dust. Hens, dust-bathing, and stupid bewildered geese rush back into the gardens and the houses as we approach, and children come shyly to look at us, strangers—and strangers on horseback, too. We pass the quiet church full of dim cool light, and come at last to the Manor House set in its own well kept domain. Hounds bay at us and servants run shouting for someone to come and hold our horses. We have arrived at the largest of the three manors held by Rollo FitzWilliam who holds them for Robert Fitzgerald who holds them with others for the King. To-morrow we shall begin the work of making lists of everything these people have for the Domesday Book, which the King has ordered to be made.

THINGS FOR YOU TO DO

1 Draw a plan of a three field village showing wasteland, forest, the lord's mill, the church, the cottages and the lord's domain. Mark on it the land owned by the villein in the story. Mark the north point.

2 Call the three fields of the village Northfield, Southfield and Westfield. Say what is growing in each this year, what will grow in them next year, and the year after.

3 Was a list of belongings made in your area for the Domesday Survey? Try to find out and make a copy of it if it was.

4 Are there any remains of Norman times in the buildings of your area?

5 How was the villein dressed? Draw a picture of him.

6 Draw a diagram to show the size of a "strip" in the common field.

CHAPTER XXX

WHAT'S IN A SURNAME

UNTIL quite recently it was common in some parts of Lancashire to call a man by his grandfather's, his father's and his own Christian names putting "'o" (meaning "of") between them. A man might be called "Bill o' Bob o' Toms" or "George o' Jack o' Johns." Yet a good many of us have surnames which have to do with the various jobs which the men undertook in the Three Field System.

Is your name "Hayward" or "Haywood"? You all know the word "warden." During the last war we had A.R.P. wardens. The word means "somebody who looks after something." Ward has the same meaning: so the Hayward—or, if you go on saying it carelessly, it becomes Haywood—was the man who looked after the hay, and did various other jobs. You will remember that under the Three Field System the great common fields were not enclosed by hedges: they were "open" fields, and sometimes you will see the Three Field System called the "Open Field System" to distinguish it from "enclosed" fields, enclosed by hedges as we have them to-day. The fallow field, on which no crop was grown, was grazed all the year round, but the other two fields, the one under wheat, the other under oats and barley, were thrown open to the cattle only after harvest. Until then they were protected by hurdles set up all round them. The meadows were open after hay harvest, and cattle could be driven on to the wasteland at any time if need be. Seeing to all this and looking after the cattle made the hay ward's an important job.

If any cows did stray from the fallow field or meadow they were caught and put into the "pound" to wait for their owner to fetch them back again. The man who looked after the "pound" was called the Pounder, or if you say it carelessly, the Pinder.

The name "Fallowfield" we may guess, also goes back to the three field system. One year in every three the fields were rested. There had to be some means by which each year some wheat and some oats were grown and some land left fallow. This is how it was done with three fields:—

Name of Field	Years		
	1	2	3
Northfield	Wheat	Fallow	Oats
Westfield	Oats	Wheat	Fallow
Southfield	Fallow	Oats	Wheat

This means that in the old manorial village there was little winter food for cattle other than hay, or, if it could be spared, some poor oats. Therefore it was not possible to keep many cattle through the winter months, and some had to be killed in the autumn and carefully salted so that there would be some meat to eat. Because such meat was not very appetising, spices—nutmegs, cloves, chili, peppers, and so on, were much prized by these people, especially the lords and others who could afford to pay the very high prices charged for them. The spices had to be brought a great distance, as it seemed then, in small sailing vessels keeping close to the coasts, or carried on ox wagons or on horse-back across the countries between us and the East.

Without spices winter food must have been unappetising. It was, you may remember, the lack of fresh vegetables, fruit, and milk from well-fed cows which caused the people of the Common Field Village to live, during the winter months, in a state of health close to scurvy. The villagers must have lived very largely on bread with some vegetables such as cabbages and onions, peas and beans, some fruit like apples and pears, an egg or two, small game like rabbits and birds, a little—a very little—meat, and for the children some milk. For drinking there would be water and beer, and for the lord, some French wine.

In the years of flood and drought there would be little enough to eat. The children even would be lean and hungry, for in those days without good roads, and with ox-wagons for transport, it would be difficult to get food from neighbouring villages even if they, too, had not suffered from the same troubles, and had enough and to spare. They could store nothing to fall back on, nor could they bring it, as we can now, across the seas. The villages produced for themselves nearly all they needed. We should speak of such villages as being self-sufficient—that is, they had to try to produce for themselves sufficient of everything they needed. Even at the best of times there was never much over. Villages in India and China live like this to-day, and floods and droughts mean starvation for thousands of people.

The Reeve (Is your name Reeve or Reeves ?) was the foreman of the villagers. He was elected by them and it was his job to see to it that the villeins did the work required of them by the lord of the manor, as well as that in the open or common fields. The lord either held the land from some over-lord who held it from the King or else he himself held it directly from the King. No matter how he held it the lord paid for it by doing the military service required by his over-lord or the King. The villein paid for his strips in the open fields by the work he did on the lord's estate. This arrangement by which each person held his land from the one above him in return for his services is called the Feudal System. The reeve was an important official in keeping the villein up to his work on the lord's domain.

It is clear that the smaller the amount of land which was held the smaller would be the amount of work owed to the lord. This means that, apart from those men who were said to be " Freemen " and who owned their land outright, each man in the village did some work for the lord of the manor, those with least land doing the least work for him. The lord usually required two days' work each week, and extra days when there was much more than usual work to be done as at ploughing and harvesting. It would be at these times that the reeve's work would be most difficult. He would have to keep a careful account of the work done. It was also his job to see to the orderly working of the land, and the good conduct of the villagers.

The Miller ground the grain in the lord's mill. Everyone in the village took his grain to this one mill and paid for the miller's work and the use of the lord's property, by leaving a quantity of flour and grain. Money, as yet, was very scarce for these people. If they paid dues or fines to their lord, they paid them very often in kind—that is, they would be told to take so many chickens or eggs or something else of the same value. We shall see later that, as time went on, money became more plentiful, so the lord began to take payment in money for dues and fines, and even in place of work on his land.

We have counted four or five people with special jobs in the village. There were many more than this, though few of them did only one job, and no more. There might be a fisherman for the lake nearby, and he might be called Fisher. The lord might have his Hunters or Huntsmen, his Falconers and Hawkers who looked after the tamed birds of prey which he flew for sport. There would most likely be a Smith and almost certainly a Priest. There may have been a Brewer, a Woodman, and a Bowman. Some of our names begin here with the division of labour in the old manorial village. The simple division of the work between the men and women, which we noticed among the Kaffirs, became more and more split up as the needs of people grew in number and the sizes of the villages increased.

Every man and every woman in a village of forty cottages knew every other man and woman. They stood and talked about their own and their neighbours' troubles. The women helped one another if they were sick or going to have babies. The men helped one another with the work that was too heavy for one. They belonged together, and were cut off from the bigger world by a stretch of waste land or forest. People in other villages were often thought of as foreigners. When, some centuries later, people began to flock into the great towns in the Industrial Revolution, this feeling of belonging together was lost. It was a great loss in many ways. Often, instead of every man helping his neighbour, it became a case of every man against his neighbour. In the old village each man had certain jobs to do: if he tried hard to do them his neighbours thought well of him, and he was content knowing that his work helped everybody else. The new towns of the nineteenth century were so great that a man felt friendless and could not easily see how what he did helped other people as well as himself and his family.

You in your classroom all know each other. You know that if one makes a noise the others can't work: if one throws paper about, the room looks altogether untidy. If one of you plays football for the school or one of you draws a beautiful picture which all the school sees, you are all quite proud and say " He (or she) is in my class." Outside, too, it is a good thing to belong to a group like the scouts or the guides or the life brigade. Learn to help other people if you can, and be sure that what you do, affects many more people than you sometimes think.

THINGS FOR YOU TO DO

1 Write down four surnames not given in this chapter and say how each one began.

2 The sentences below have been chopped into two parts. Fit the parts together again and rewrite them:—

In the open field village—

(1) Cattle had to be killed off in late autumn	(1) because salt meat was not very appetising.
(2) Spices were much prized	(2) because they lacked fresh vegetables, fruit and milk.
(3) In the winter months many people lived in a state of health close to scurvy	(3) because there was little food for them.
(4) Money was not very much needed	(4) because they produced most of what they needed for themselves.

CHAPTER XXXI

FIELDS FROM FIELDS AND FIELDS FROM WASTES

WHILE there were at the time of the Norman Invasion thousands of manorial villages with their great open fields and waste lands, with their villeins working on their own strips and for their lord, there were also villages where the system had begun to break down. Some men who held no land were even then working for wages, and some of the villeins began to pay their lord, not by so many day's work, but in money. Gradually, too, parts of the waste land which were known to be especially suitable were being ploughed up to produce more food. To keep cattle, sheep, pigs and poultry out of the crops grown there, these new fields were enclosed by hedges, and instead of being divided into strips, they were worked as a complete piece for which a rent in money was paid to the lord. So long as there was plenty of waste land left on which to pasture their stock, the enclosing of this ground could only be good for the villagers and for the lord: one had a bigger food supply: the other received more money.

These changes were quickened by the Black Death. This plague began right over in the Far East, and spread gradually across Europe until it reached Britain in 1349. It was carried by the fleas which lived on rats, though the people of those times did not know that. To-day, if you go to see a ship which has come from some foreign country bringing your meat, wool or tea, you will notice that the mooring ropes are carried through a circle of metal a few feet from the ship's side. Rats can easily get so far down the rope, but find it impossible to climb over the metal circle. Even to-day, then, we try to prevent rats which may be carrying plague from getting into this country, for plague does still occur: there was a plague in Foochow while I was visiting there in 1945.

Now, the Black Death killed between one half and one third of the people of this country, not only in the towns but also in the villages. Crops were to be seen rotting in the fields because there were too few workers left alive to harvest them. When a thing is scarce it usually becomes more valuable. For example, ask your mother whether milk is cheaper in summer than in winter. When are apples cheapest? Therefore at this time the smaller number of labourers left could ask and get much bigger wages than they did before. The government tried to stop this by passing the Statute of Labourers in 1351: it tried to make them work for the same money as they had been getting before. At the same time the villeins and cottars who had still to work for their lords did not want to go on doing so, either because they knew that if they were free they would be able to ask for good wages from those who would welcome their labour, or because they would rather pay rent than give their labour to their lord.

The lord probably began now to stop waste of time in the working of some of his land by putting together and enclosing the strips belonging to one man. In the old open fields a man had spent a great deal of his time going from one of his strips to another. To save labour on his own land the lord might enclose it and use it for a sheep pasture, for one or two shepherds only were needed to look after the flocks on land which it had taken a great many more men to plough, to sow, and to reap. This was particularly the case as the growing woollen industry required more and more wool.

So long as the lord enclosed only his own ground for sheep-rearing there was not much lost by the villagers; but when the lords began to enclose much of the waste land too, then the effects were very serious. The villagers had always had the wastes on which to feed their cattle and pigs. The cattle were needed to pull the ploughs and were, besides, valuable for the manure without which the soil became more and more starved of plant foods. If the open fields were enclosed and turned into pastures, it was still more serious for the villagers, for how were the people to go on living? If this were done the lord would then need only one or two of the men to look after his sheep. Only the freemen, the freeholders, were really safe: the lord could find no excuse for sending them off their own ground.

So serious was the effect of this enclosure for sheep pastures that the government had to step in. First, it was made a crime to enclose land for pasture unless a certain amount was kept for ploughing (1489), and nearly a hundred years afterwards, because enclosure was still going on, a law was made that all cottages built should have at least four acres of land attached to them. Yet, someone always found a way of getting round the laws just as the "spivs" do to-day. For example, a field with one furrow turned across it was called a ploughed field. In 1534 the government passed a law which said that no man might have more than 2000 sheep: but if the man's children each had another thousand the law was not broken!

At the end of the sixteenth century these lines were written:—

"Sheep have eaten up our meadows and our downes
Our corn, our wood, whole villages and townes
Yea, they have eat up many wealthy men
Besides widows and orphan childeren
Besides our statues and our iron lawes
Which they have swallowed doun into their maws
Till now I thought the proverb did but jest
Which said a black sheep was a biting beast."

The enclosing of the common fields, then, caused many villagers to wander about the country in search of work. Many of them found none, and they became beggars and thieves. The government tried first of all to stop them begging by passing stern laws, but in the end a Poor Law was passed in 1601. This said that aid was to be given in their own homes to those who were not able to work. The parishes were to find work or to give help until work was found for those who were fit to work. Poor children were to be put to learn some trade; we have already seen how this law was carried out for them two hundred years later at the beginning of the Industrial Revolution. The Poor Law of 1601 was the first sign that the country as a whole would have to take care of all those in need. To-day we do this to a very large extent, and a recent Act of Parliament provides against all sorts of difficulties in people's lives. It provides money to help pay for clothes and other things needed by a mother and her baby; it provides money for those who are now too old to be able any longer to work. You and I and the rest of us cannot let other people want. We all belong together, and we must all try to help one another.

The lords of the old manorial villages had begun after the Black Death, by trying to keep their villeins and cottars to work for them because labour was so scarce: but they had finished by driving them away whether they wished to go or not, so that the land might be enclosed for sheep. By the end of Queen Elizabeth's reign the arrangement by which men held their land in return for working for their lord had disappeared in this country, and already, too, in some parts, the countryside was beginning to look very much as it does to-day away from the cities and main roads. Though much of the land was still being worked on the old three field system by tenants paying a money rent in place of service to the lord, in many other parts the Domesday Surveyors would scarcely have known it for the same England. Much land had been enclosed by hedges. Many of the wastes across which the Norman traveller had cantered his horse, had been cut up into patches of ten or twenty acres by hawthorn hedges. Lovely wild parks preserved for hunting remained. Great black-beamed Tudor mansions, set in beautiful gardens and smooth lawns, had been built from the profits made from the steadily growing work of the towns and flourishing pastureland.

THINGS FOR YOU TO DO

1 Measure a line six inches long: mark it off in half inches and inches. Against the inch marks write the dates 1300–1900. Against long arrows pointing to the correct date on the line write the names of important events such as the Black Death, Statute of Labourers.

2 Write a number of " Es " along the line whenever enclosures were important.

3 Rewrite the following, putting in the missing words:—

Especially after the . . . . . , ... in 1349 enclosures of . . . . . , ... , took place for . . . . . rearing. The English . . . . . trade was growing very fast and there were . . . . . people to work on the land. Common field enclosure also took place very often during the . . . . . century, and because of it so many men became . . . . . and . . . . . that a . . . . . , ... was passed in 1601.

INSTITUTE OF EDUCATION FOR WOMEN
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CHAPTER XXXII

LIKE A SKELETON COVERED WITH PARCHMENT

If your father and mother are tall there is a good chance that you too will grow up to be tall. If they are shorter, then you may expect not to grow so much. This, as you know for yourselves, is not always true: sometimes small parents have tall children, but generally youngsters are something like their mothers and fathers. If then we wanted to grow a race of tall people we might start by allowing only the tall ones to have families, and of the children allow only the tall ones again to become parents. If you went on doing this you would in a long time make the British people a few inches taller on the average than they are to-day.

While it is true that tall parents often have tall children, the height is an upper mark which they *may* reach but will not reach unless they are well looked after while they are growing. We have seen that the children of the Industrial Revolution who worked very long hours in badly lit and airless factories and who were poorly fed and housed, were often stunted and twisted in growth. If they had been properly cared for they would have been much taller and stronger and heavier. Twelve-year-old children who worked in factories in 1835 weighed on an average 4 stones 10 lbs.: this is to-day the average weight of a London school child of only nine and a half years of age.

What, you may ask, has all this to do with "a skeleton covered with parchment?" This description of the Warwickshire breed of sheep in about 1730 will answer your question. "His frame, large and loose, his bones heavy, his legs long and thick, his chine as well as his rump as sharp as a hatchet, his skin rattling on his ribs like a skeleton covered with parchment." Sheep and, of course, other animals as well, could be greatly improved in size and weight by seeing that the two important facts

63 Thomas William Coke, a famous English farmer in the early 19th century who improved his land, his animals and his farm implements. Here he is in the year 1808 looking over some of his Southdown sheep. Thousands of men from all over the world visited his farm in Norfolk to see his successful methods.

which have just been given about size were put to practical use. First, by breeding only from the best a new and better kind of animal would be produced; and, secondly, by proper feeding, they would grow fully to that size and weight which were the greatest possible for them.

In 1760 a stout, bustling man with a round, red face, and probably a deep booming voice, began to improve animals by using these two facts. His name was Robert Bakewell, and he was most successful with sheep breeding, but others who followed his ways also improved cattle, pigs and horses very greatly. These improvements were quite quickly made, for animals, having shorter lives than our own, are also able to have families much sooner. Important people from all over Europe came to Robert Bakewell's farm to see his animals and to learn his methods. The outcome of his work was that the meat supply of the country was trebled. What had been "skeletons covered with parchment" became sturdy animals with shorter legs, and squarer bodies, well covered with meat. Sheep sent to Smithfield market in 1710 weighed on an average 28-lbs.: in 1795 the average was 80-lbs. Lambs which weighed 18-lbs. in the first year weighed 50-lbs. in the latter. Beef cattle went up from 370-lbs. to 800, and calves from 50 to 148 in the same eighty-five years. Stock breeding is still one of the important branches of British farming: for example, the ranchers of Argentina still buy beef cattle from us to improve their herds (*see* p. 148).

At least as important as Robert Bakewell's careful breeding of animals were improvements in cropping which made the better feeding of them possible. The great name linked with this is Charles, second Viscount Townshend, sometimes known as "Turnip" Townshend. In the open fields, as you will remember, the land was left idle one year in three, so that all the plant foods should not be taken out of the soil. Townshend showed how it was possible to use this fallow land and at the same time add to its store of plant food, so increasing the crop which followed.

64 Charles, second Viscount Townshend

Nitrogen is an important part of the food needed by all plants, and so crops which are grown after clover or beans are likely to be better than if the land had been left fallow. Townshend's great work was that he did away with the need for leaving the land idle for one year in three.

His nickname, "Turnip," was earned because he showed that growing root crops like turnips, swedes, mangel wurzels—or even, in your own garden, parsnips and carrots—would also improve the land. These root crops add nothing to the soil but they are grown in such a way that there is a good space between each plant, and the soil in between them is kept "clean," as the farmer says, or free from weeds. Often in the spring you will see a line of men and women in our fields hoeing root crops. The seeds are set close together in a little groove by a machine called a "drill," but when the seedlings come up they are thinned out by hoeing, leaving a good strong plant about every nine inches. At the same time as the plants are being thinned out the weeds are cleared. In crops such as wheat and oats, because the plants grow so close together, it is impossible to cut down the weeds. Therefore after our farmers have grown corn they usually put in a root crop so that the land can be " cleaned " up again.

Just lift the front wheel of your bicycle off the ground and push the spokes slowly. The wheel turns round, or, as we might say, it rotates. The air valve comes back to the same place again at the end of the rotation. The system which began to be followed as a result of " Turnip's " work—and which is still very largely followed by our farmers to-day—is sometimes called a " four course rotation," because at the end of four years the same crop is sown again on the same ground.

This will show you how the "three field system" can be compared with "the four course rotation."

	Three field system (on the same field)	Four course rotation (on the same field)
Year 1	Wheat	Wheat
2	Oats or barley	Turnips (or any root crop)
3	Fallow	Oats
4	Wheat	Clover
5	Oats or barley	Wheat
6	Fallow	Turnips

When roots became a common crop it was unnecessary to kill off the cattle and sheep at the end of the autumn for they could be fed through the winter on clover (which is cut, dried and stacked), on hay or on chopped roots. Sheep will gnaw swedes and mangolds in the field, and so a hurdle fence is often put up to enclose part of a root crop and the sheep are driven in to eat the crop off. In this way it saves gathering the roots and the sheep manure the land at the same time. Sometimes your mother says "Oh, this milk: it tastes of swedes again," and she is likely to be right; swedes and mangolds with hay, clover, and cotton seed, and other kinds of dairy cake, are an important part of the winter food of dairy cattle these days.

Turnips and clover were the foundations on which a new system of farming was built, for they made it possible for the farmer to have bigger and better-fed sheep and cattle. They in their turn made more manure keeping the soil rich and the rich soil grew heavier crops, and the heavier crops made food for the stock more abundant. So, it seemed to these farmers that the way one thing helped another along made certain of good profits and an ever greater supply of food for the country.

THINGS FOR YOU TO DO

1 Finish the following sentences and write them in your note books:—

In the eighteenth century Thomas Bakewell was famous for . . . . . and Charles, Viscount Townshend was famous for . . . . .
Even King George III wrote articles which he signed . . . . .

2 Ask your father to show you what crops he will grow in his garden this year. Will he be planting beans or peas in the same place as last year? Can you draw a plan of the garden for last year and this year so that you can see and compare the crops?

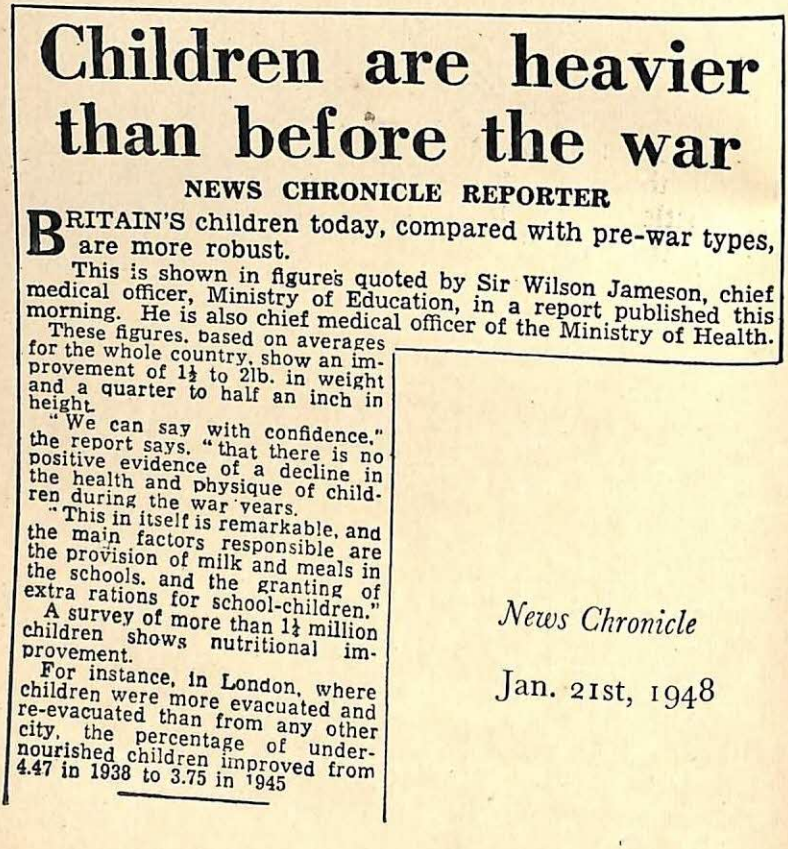
3 Draw a circle 1½-in. in diameter. Break it at four places like the points on a compass. Write in the breaks the crops grown in a "four course rotation."

4 Draw two rectangles 1-in. by ½-in. and 1½-in. by 1-in. Label the first 1710 and the second 1795. Write the name Thomas Bakewell between them. Now draw a sheep in each rectangle.

From My Scrapbook

A NEWSPAPER REPORT

SINCE I began writing these pages the newspaper has printed this summary of a report. Perhaps it will interest you and perhaps from it you may learn that your lessons will go on even when you leave school and begin work. You will always be finding pieces like this, which will remind you of something you read in a school book, or of what your teacher told you.



Children are heavier than before the war

NEWS CHRONICLE REPORTER

BRITAIN'S children today, compared with pre-war types, are more robust.

This is shown in figures quoted by Sir Wilson Jameson, chief medical officer, Ministry of Education, in a report published this morning. He is also chief medical officer of the Ministry of Health.

These figures. based on averages for the whole country, show an improvement of 1½ to 2lb. in weight and a quarter to half an inch in height.

"We can say with confidence," the report says. "that there is no positive evidence of a decline in the health and physique of children during the war years.

"This in itself is remarkable, and the main factors responsible are the provision of milk and meals in the schools. and the granting of extra rations for school-children."

A survey of more than 1¼ million children shows nutritional improvement.

For instance, in London, where children were more evacuated and re-evacuated than from any other city, the percentage of undernourished children improved from 4.47 in 1938 to 3.75 in 1945

News Chronicle

Jan. 21st, 1948

CHAPTER XXXIII

IMPROVE OR STARVE

In 1700, before the days of Bakewell and Townshend, English farming was very much as it had been for three or more centuries. Farming methods were still backward: much of the land, in spite of enclosures for sheep pastures, was still cultivated on the three field system. Tools and machines were still crude, and a farmer of 1450 would probably have been comfortably at home on an English farm three hundred years later. During those three centuries the number of people in the country had grown very little, and the need to supply more food had not arisen: but will you think back to what was happening in England at the beginning of the eighteenth century? Who invented what? What effect did these inventions have on the number of people and the growth of towns? Kay, Hargreaves, Arkwright, Crompton, Watt and Cartwright—what were they famous for? In 1700 there were about six million people in Britain, fewer than the number in London to-day. In 1800 there were slightly more than sixteen million. To feed this greater number of people improvements in food growing had to be made, otherwise starvation would have occurred, for in those days it was not possible to buy or to bring in large quantities of food from other countries.

One of the greatest hindrances to improvement was the old open field system. It was wasteful of the farmer's time: fallow ground was no longer necessary in view of "Turnip" Townshend's suggested crop rotation. If cattle and sheep were to be carefully bred it was better not to leave them, good and bad alike, to roam about together on the wastes, on the stubble of the corn fields, and in the fallow. On all counts, the open field system had to go. In the sixteenth century, enclosures for sheep pasture had been made against the wishes of the government and the villagers: but the purpose of the enclosures which began in 1760, and which saw the end of the open field system by 1840, was to increase the supply of food. The government, therefore, did its best to help those who wished to enclose wasteland or common fields. Land was enclosed by getting an Act of Parliament passed, but before this took place, a meeting of the villagers was held, and though this might seem to give the ordinary man a fair say in the matter, the biggest owners of land were usually able to force the rest to fall in with their wishes. The landowners had much to gain, because enclosure increased the value of their land; but most of the villagers, especially the poorer ones, had everything to lose. When wastes and common fields were enclosed they had nowhere to keep their few pigs, sheep, poultry, and perhaps a cow. Sometimes they were given a small patch of land in place of their rights on the wastes, but more often than not they became landless labourers with no stock of their own, living only on their wages. A man named Arthur Young, famous in his day, who became the first secretary to the Board of Agriculture, was very much in favour of enclosures, but even he wrote in 1801 that "By nineteen out of twenty Inclosure Bills the poor are injured, in some grossly injured . . . The poor in these parishes may say, and with truth, 'Parliament may be tender of property: all I know is that I had a cow and an Act of Parliament has taken it from me'." Discontent was so great that there were small riots: ricks were burnt, windows and farm machinery were smashed, but in the end this great change from open to enclosed fields took place peaceably enough. The face of the country was soon very different from what it had been before: wastes and open fields were swept away, and the hedgerows which are so lovely a part of our landscape to-day were planted round the enclosed fields.

There was everywhere a keenness to improve farming among the nobility and gentry. Even King George III wrote articles for the Farmers' Magazine, and signed them "Farmer George." Farmer clubs were started in the villages and prizes were offered by the Society of Arts for the invention of farm machinery. The change-over to enclosed fields was quickened by the wars against Napoleon's France, which made any bringing in of food very difficult at the same time as the population of the country was growing rapidly with the speeding up of industry.

When the French War ended in 1815 very great progress had been made by our farmers, but they had borrowed money to pay for their improvements, and, with the end of the war, the high prices they had been getting fell quickly, and to a low level. A good deal of the ploughed land was therefore made into pasture, as this was cheaper to farm, fewer workers being needed to look after sheep and cattle than to plough, sow and harvest. Rents were still high, and many farmers were not able to return the money they had borrowed. This was especially true of the small farmers. To help them, a Corn Law was passed in 1815 which stopped the import of wheat until the price for a quarter grown by our own farmers was 80*s.* or more. A "quarter" is eight bushels each of 60-lbs., so a quarter is 480-lbs. of wheat, 80*s.* is 960 pence: so 80*s.* a quarter is the same as 2*d.* a pound.

This suited those who lived by farming, but was hated by the people who had gone to swell the numbers in the new towns which had grown up on the coalfields of the north of our country and around London. There the factory workers were getting miserable wages, and they wanted as much food at as low a price as they could possibly get it. In the long run, it was certain that the law would be done away with altogether for as the nineteenth century grew older the population of our country became greater and greater, spreading the smoke-filled towns of mean houses ever wider across the land. Our farmers then were quite unable to grow all the food which was needed, and to-day we can scarcely grow a third of it. The factory owner, too, not only wanted cheap food for his workers but also complained that if foreign countries could not sell their corn in England they could not earn the money with which to buy British goods—and this was true then as it is now. Keeping up the price of corn meant that the factory owner had to pay higher wages, and this increased the cost of the goods he had to sell. The farmers replied that if they were ruined because cheap food was brought in, the factory owners themselves would also lose because it was to the farmers that many of their goods were sold. At last, in 1845, the Corn Law was abolished (or, as we say, repealed), and from then onwards foods of all kinds began to be imported freely into the country.

The repeal of the law did not cause the farmers to suffer as much as they supposed. They improved and cheapened their methods, and, because the wages of the town workers were going up and their numbers increasing, there was a greater demand for the farmer's produce. Unhappily these "Good Years," as they have been called, or the "Golden Age" lasted less than thirty years from the repeal of the Corn Laws, for changes in the way goods could be carried about were taking place: new railways were opening up the rich soils in the heart of North America. Once in the days of wagons and small sailing ships, it had only been possible and profitable to carry small quantities of very valuable goods—like spices for example; but now with railways and steamships, it became possible to carry great loads of quite cheap things, and to carry them quickly at a low price. Because of this the old buffalo hunting grounds of the Indians were shortly to be as completely changed by the plough as had the English countryside by enclosure nearly seventy years before.

To the Romans, as you may remember, Britain had been the "Granary of the North." Our country last sent wheat abroad in 1773. From then onwards our farmers had to make great improvements to be able to go on feeding the growing population. Then, just about one hundred years later, in 1871, men thought of building the Canadian Pacific Railway which would bring, from then on, greater and ever greater quantities of wheat to the Canadian seaports to be shipped into this country. The position was completely changed. Once exporters, we now began more and more to rely upon wheat imported from the new countries which were being opened up across the seas.

THINGS FOR YOU TO DO

1 Using the numbers below make a graph to show how the population of Britain grew in the nineteenth century.

1701	6 million	1857	27½ million
1751	6½ "	1901	41½ "
1801	16½ "	1931	45 "

2 Draw two rectangles 0·25-in. wide. Make the first 0·65-in. long: against it write 1751. Make the second 4·5-in. long: against it write 1931. In the first mark off 0·1-in., in the second 3·6-in. Colour in the first part of each column. These now stand for the part of the population living in towns. The plain parts stand for the people living in the country.

3 Draw a line 5-in. long: divided it into half inches. Against the ends put the dates 1750 and 1850. At the right places draw arrows to this line and name them to show the most important dates in British farming.

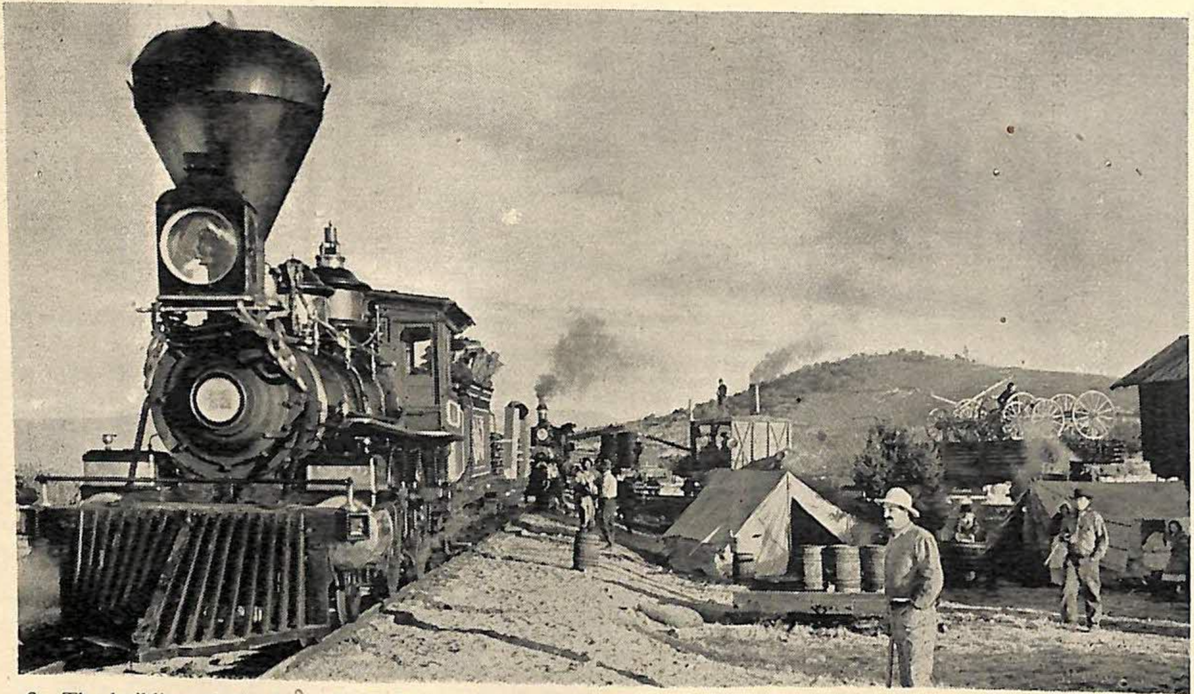
CHAPTER XXXIV

CANADIAN PACIFIC RAILWAY

FOR hundreds of years the peoples of Canada clung to the banks of the St. Lawrence River because it was an easy route to follow. Goods could be brought in by it, and other goods in return taken out. The first short stretch of railway in Canada was built only seven years after the opening of our own first passenger line from Manchester to Liverpool in 1830, but another half century was to pass by before the dream of building a railway across the 3000 mile width of Canada came true.

2500 miles from Montreal on the St. Lawrence, away on the coast of the Pacific Ocean was British Columbia. To reach it from this country a ship had to go south of South America, a journey of 13,000 miles, for the Panama Canal had not yet been cut. When, in 1871, it was suggested that this distant colony should join the others around the St. Lawrence to form together what is now known as Canada, its people said that they would on one condition—that a railway should be built to connect it with the east. Such a railway was promised, and it was agreed that it should be finished in ten years. In fact, the railway was not opened for through traffic until 1887, six years after the promised date.

Canada is a mighty land of broad rivers and high mountains, of deep forests and vast plains. Great difficulties stood in the way of the railway builders. The "muskegs" or marshes north of Lake Superior swallowed rock and earth and great lengths of line before they were crossed successfully. The part to the west of Lake Superior was "a waste of forest and rock and swamp, every mile of which had to be hewn, blasted or filled up." The wide prairies were easy country with dry soil, and gentle slopes covered with open grassland, but Indians would try to stop the building of the line by cutting down telegraph wires or attacking bands of workmen on the track. The greatest difficulty of all was



65 The building of this *Union Pacific Railway* began in the United States of America in 1865, some years before the Canadian Pacific was started, but this picture, taken from a famous film, shows many things described in this Chapter. Notice the type of funnel on the engine. How is the engine headlamp lit? Do you see the cow catcher? Can you find the bell? Do you notice the tents and the woman washing clothes in a wooden tub? One man carries a gun. There are cart wheels stacked on a pile of rails to the left of the corner of the wooden building.

the towering, snowclad mountains, and their streams tumbling and dashing down echoing, steep-sided valleys.

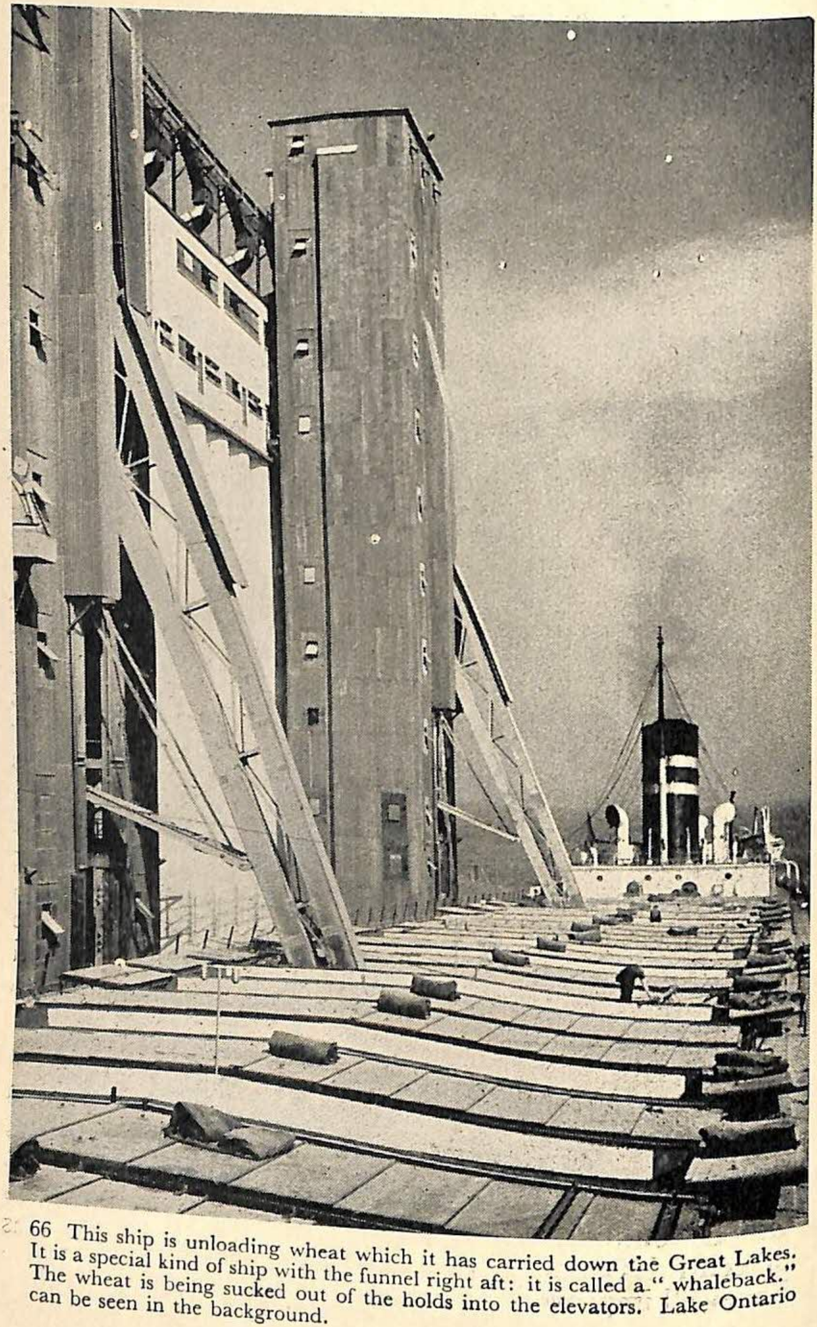
Can we stand together, you and I, and look at the railway being built on the prairies? In the distance, about half way to where the rim of the flat earth meets the dome of the sky is the end of the line. From here we can see the bands of workmen struggling with the heavy logs which are used as ties—or as they say in England, sleepers. A wood-burning engine stands there hissing a plume of steam, golden in the bright hot sunshine. It has a funnel shaped like a letter Y, and, at the front carries a cow catcher, a sort of metal fireguard to keep animals from getting under the wheels, for there are still buffaloes and other wild animals here. There are no fences, and certainly no hedges along the sides of the track. The engine rings a bell as a warning that it is going to move. Yes. Here it comes, puffing back towards the little collection of tents and wooden buildings which is all of the town there is as yet in this year 1876. Only the railroad builders, and those needed to feed them and to supply their wants live here. There is a bar and an eating house: there is a wooden hotel and bunk-houses for the men. There is a water tower where the engine can be filled and there are hitching rails for tying up horses—cars are still thirty years away in the future. The prairies are still the prairies, and ploughs have not yet broken up the plain.

In the winter the work is much more difficult. Thick woollen underclothes and heavy trousers, shirts and coats, fur caps with ear flaps, woollen stockings in knee length boots, and thick gauntlets have to be worn against the cold. In January at Winnipeg the thermometer usually shows 35 to 40 degrees of frost—that is 35 or 40 degrees below freezing point, which is 32 degrees on a Fahrenheit thermometer.

The opening up of the prairies did not have to wait for the finishing of the through line because Canada is very fortunate in having ready-made a beautiful as well as a most useful means of getting right into the heart of the country. The St. Lawrence River and the Great Lakes are over 1000 miles long: Lake Superior, the biggest and highest of them all, is greater in area then Ireland or Scotland. They are all really inland seas of fresh water in which ships meet storms, and are well out of sight of land. The River St. Lawrence drains them to the Atlantic Ocean, but though it was possible to use them as they were, men have improved them by making canals with locks to go round the falls and rapids. The greatest of these is Niagara, where the water falls 165 feet, dashing and boiling into a chasm which it has worn out for itself. The Welland Canal goes round this, and special grain boats bring much of the gold of the prairies out this way to Montreal. There is one great disadvantage with the Lakes and the St. Lawrence. If the winters are so cold . . . . What do you think will happen?

I like to think of this railway pushing out from the Great Lakes as a kind of fuse which was just starting to burn, for along it there began to move a stream of European peoples, leaving behind the clanging factories and smoky skies of Britain, leaving behind their poor farms in Poland and Russia, leaving the potato patches of Ireland. They wanted this new land of Canada (and of the U.S.A. too). Soon at wayside halts along this line there stood little knots of bewildered people speaking different languages, and owning different beliefs. With them, bundled up in sacking or sheets, they had all the things which they had been able to bring from their old homes. They had no houses to go to: no one came to welcome them.

The burning fuse ended in a great explosion which blew the prairies wide open, and covered them in a golden carpet of wheat. Nearly thirty years before, David Fife, an Ontario farmer, had bred a type of wheat which would grow successfully in the short hot summers of central Canada. You will remember how Thomas Bakewell improved the breed of sheep, how he bred only

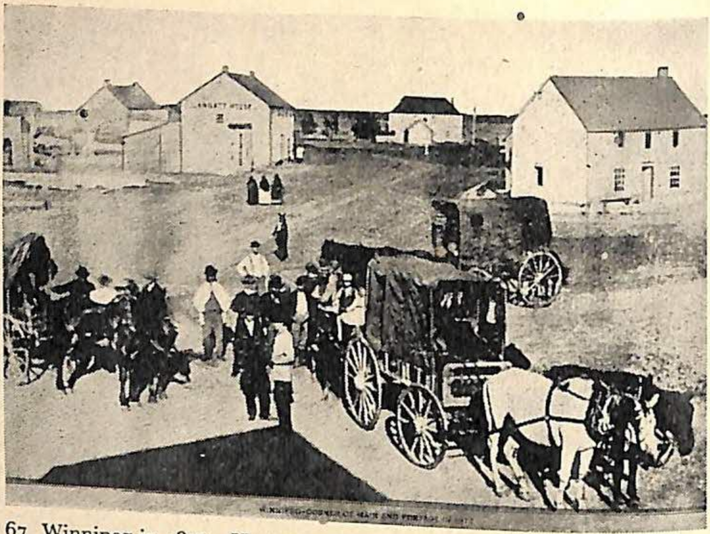


66 This ship is unloading wheat which it has carried down the Great Lakes. It is a special kind of ship with the funnel right aft: it is called a "whaleback." The wheat is being sucked out of the holds into the elevators. Lake Ontario can be seen in the background.

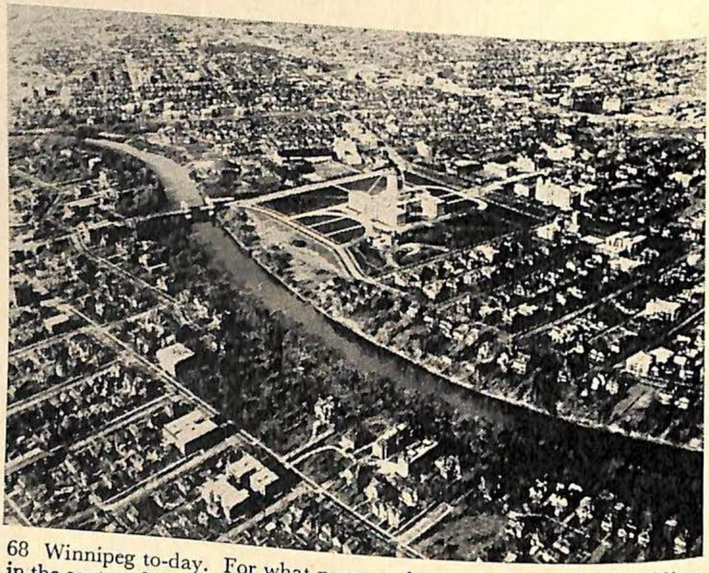
from the best, and from the best again? David did this with some wheat which had been sent to him from the Ukraine, part of western Russia, in many ways the same as Canada. Of the seeds he planted, only a few came up and ripened. These he carefully planted again: a few more came up this time. Again and again he did the same until he had seed which would grow successfully, and which he could spare from his own fields for other farmers. Yes, the C.P.R. was the fuse, David Fife's wheat the explosive and hundreds of thousands of acres of Red Fife wheat were the outcome of the explosion. Since then the Canadian government has spent large sums of money on improving the wheat still further, so getting bigger crops and making it possible to grow wheat farther and farther north where summers are shorter.

How did the explosion change British farming? Steamers linked the wheat ports of the New World to us. Our great towns needed food as cheaply as they could have it. Wheat growing in Canada was cheap: there was plenty of rich new land, and only a few people with machines to work it. Wheat growers in England could not afford to sell at such low prices, and so many British farmers were ruined. Ploughed land was seeded down for pastures: some of it just grew over with weeds. If you could have sat for some years in a balloon looking down on England you would have seen a green carpet gradually unrolling from the west: the green carpet would have been grass. Only in the south and east of our country was the soil still made to grow corn.

At first, meat producers did not feel any effects from the opening up of the new lands, but their turn was to come, for in 1880 the first ship load of frozen mutton was landed in this country from Australia. From then onwards not only wheat but also meat poured in from the Americas and Australia. The cost of food to the townspeople of Britain fell quickly, which was good for them, but farmers everywhere lost money and Britain



67 Winnipeg in 1871. Here are eight wooden buildings set down in a great open stretch of prairie land. Compare this picture with that of Winnipeg to-day.



68 Winnipeg to-day. For what purpose do you think the big building in the centre of the picture is used? What river is shown here? Does the plan of the streets seem strange to you? Compare this picture with Illustration 37. In what ways are the two towns different?

fell slowly from the proud place she had held from the time of Bakewell and Townshend as one of the foremost farming countries in the world.

On the other side of the Atlantic the story was very different. In the years between 1883 and 1890, Canada's wheat crop was about eight million bushels: in 1928 it was 566 million. The small cluster of huts and tents which we left by the side of the railway in 1876 grew as quickly as the British industrial towns at the beginning of the nineteenth century. Fifty years ago Saskatoon, capital of Saskatchewan, had 100 people: to-day it is a town of 43,000 people or about the same size as Worcester in England. In 1900 Winnipeg was only about the size of Saskatoon to-day, but it is now five times as big. Its busy streets hum with cars. Railway engines thunder and shunt: trains of grain wagons run rattling over steel bridges: typewriters click busily in the eight-storey offices of grain companies and others, and Winnipeg is to-day one of the world's leading grain markets. If you look at your atlas map you will see that now the Canadian Prairies, like the Pampas of Argentine are covered with a thick net of railway lines.

THINGS FOR YOU TO DO

1 Pretend you draw cartoons for a newspaper. Draw one to show the "explosion of the Prairies into golden grain."

2 Have you any uncles, aunts or cousins in Canada? Can you bring to school stamps or snapshots, magazines or labels from food which they have sent you? Can you tell your teacher about the sort of things your cousins do?

3 Write a letter to your Canadian cousins telling them some of the things you have learnt about their lovely country.

69

Scene on the Canadian prairies.

CHAPTER XXXV

HOW TO LOOK AT A PICTURE

A FEW months ago, I received a letter from a friend of mine who has gone to Canada to live. It had taken him some time to get a passage across because there are so many people from this country who are trying to settle there to-day. Bill managed it in the end. He sent me some photographs of different parts of Canada, and among them one very like the one you see opposite to this page. I learnt a lot from looking at it. I wonder if you could do the same?

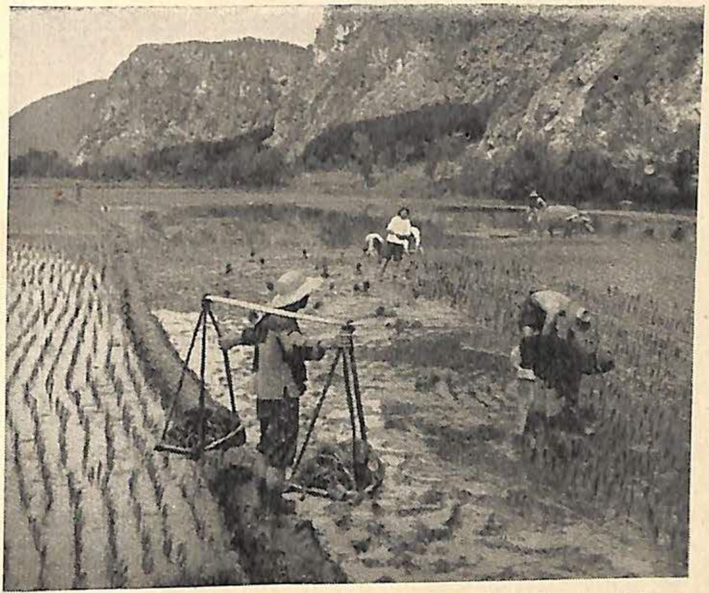
First let's see what there is in the picture. Nothing much, is there? A great stretch of flat or gently sloping land which fades away into the distance, so far away that the earth and sky seem to meet. Then, as far as we can see there is wheat, pale brown like a biscuit but rippling and changing to a lighter colour as the little breeze blows across it. In the middle of all this is a machine cutting down the wheat and threshing it as it goes—that is separating the grain from the ear. Is that all you can see—two men on a machine in a great flat stretch of wheat?

Very good then: let's see what we can't see! What would you expect to see in England which is missing from this picture? Houses, woods, railway-engines, gasometers, bridges, canals, factories and factory chimneys? Yes, all those but still more. Where are the hedges? Are there no trees? What about horses and gates, farm-houses, meadows and cattle, and people working in the fields? Where are the other crops, and oh yes! one other thing we've forgotten: where are the clouds in the sky?

From Bill's picture then we can learn a great many things about Canada's Prairie Provinces. First, we know that the land is fairly level. This helps to make the use of machinery much easier than it would be on hilly ground. The combine harvester is not the only machine used by the Canadian farmer. As soon as the land is clear of its winter snow he sets about ploughing in the moist soil. He uses a plough which will turn four furrows at a time, and is in so much of a hurry to get his wheat in that he may go on ploughing with the help of headlamps well on into the night. Can you say why this is? Then he harrows the ground with a disc harrow, a machine with a number of circular blades, to cut up the lumps. By the beginning of April the ground is ready for the drill to go over it to plant the seed. In this country we plant our wheat in the autumn because the winters are mild: in Canada most of the wheat is spring sown because the winters are so cold that seed left in the ground would not grow but would be destroyed. After the planting in April, the Canadian sunshine gets hotter day by day, and light showers of rain fall making the seeds grow quickly. After a hot, dry, late summer the wheat is ready for harvesting and again the farmer works very hard and very late to get in his crop before the autumn frosts begin. Machines then are being used all the year through for different jobs on Canada's wheatlands.

Secondly, we learn from the picture that there are few people at work on the land. In this great extent, only two can be seen. Altogether in the Prairie Provinces—Alberta, Saskatchewan and Manitoba—there are only about 2½ million people: the total area of the three is about three-quarters of a million square miles, and although much of the north of the provinces is of no use for farming, having too long and too cold a winter, this still leaves only a very few people on each square mile of land in the wheat growing parts. Compare this with our own country. England has about 36 million people in an area of 50,000 square miles, giving an average of about how many to each square mile?—700?

This is important for two reasons. Most of Canada's wheat crop is not wanted to feed her own 11½ million people, and so it is exchanged for things they need but



70 Planting out paddy fields. Note the number of people at work here. What is the man in the centre of the picture carrying? No machinery is in use but you can see how some simple instruments are dragged about in the small fields. Why do you think the men are wearing such large round hats? Do the shadows tell you anything about the height of the sun.?

do not make for themselves. Compare this with the way it used to be in the open fields of England (and as it still is to-day in the villages of China and India). They grew what they needed for themselves; their farming aimed at self-sufficiency. They did not buy grain from countries across the seas specially fitted for growing it. They used money only rarely, and there was no transport across the oceans

Then, too, we must remember that where countries in Europe and Asia may have a great many men working on a small patch of land, in Canada only a few men with machines work on a much larger piece. From the same size of field the old countries grow very much more, but as there are so many people to share, each one gets very much less than he would in Canada. This is the same as your father and mine working on their allotments or gardens: they grow much more, size for size, than a farmer does, but his fields are big and so his crop is big also. Your father and mine only grow more than the farmers from the same amount of ground because they put in much more work and spend more on manures than the farmer does.

In the old countries such as India and China there are so many people trying to live off such small scraps of ground that their share of what they grow together is only very small. They don't get wages, remember, so that what they grow is what they live on. They must live very poor lives indeed and as we saw earlier on in this book, they can have nothing to spare, nothing to save: when droughts and floods come they starve as once did the villagers in England. Even if they sold their small shares of what they grow they would get very little money.

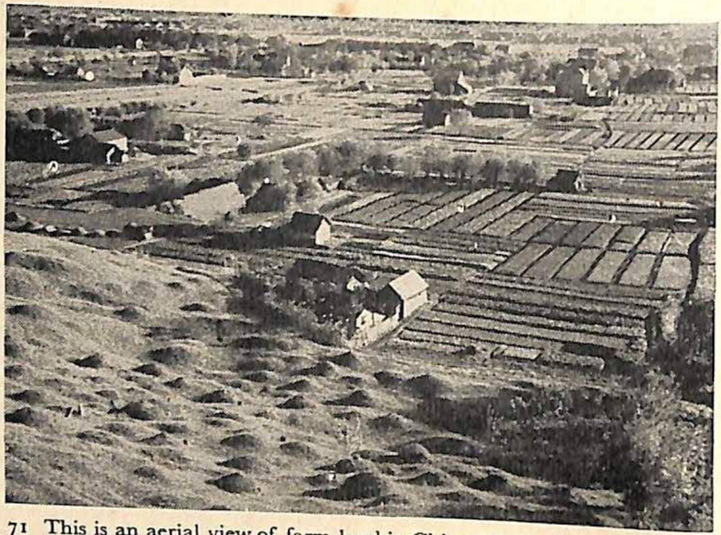
In Canada, although the amount produced by an acre is much smaller than it is even in this country, each man has many more acres that he would have here. So few people share the crop grown that each must get a big amount. This is sold for a large sum. We should say then that wages—the money earned for working—are high in Canada, lower in our own country, and lower still in China, India, Japan and the Far East. We should say too that Canada's farming was "extensive" because the farmer has a great extent of ground, and we should say that farming in China, Japan and India was "intensive" because a great deal of work goes into a little piece of ground. The two men in the picture of the wheatlands really should mean all of this to us.

The third thing we should say about the picture is that there are no hedges, no barns, no haystacks and no cattle. It is because we in this country keep cattle and sheep, and grow crops, that we need hedges. In some parts of the Prairie Provinces cattle are now being kept, but even where this is so the farmer does not plant hedges: he simply puts up wire fences. In this country hedges were generally planted long before great lengths of wire could be made, and they often have standing in them trees which must have been left there when forests were cleared away, for many of them are now hundreds of years old. In the wheat-growing part of the Prairie Provinces trees are very rarely seen unless they have been specially planted, and even then in many parts they do not grow. In fact the story is told of one town where it is a favourite Sunday afternoon trip for the people to go out to see a tree which grows nearby!

The fourth thing which we should notice is that, whereas in England fields next to each other usually have different crops in them, this picture shows only one—wheat. Here we try to keep our soils rich by planting crops in rotation: in Canada the soil was naturally so rich that little but wheat has ever been grown on it yet, but the land is now becoming poorer because of this. Don't forget, too, that the Canadian farmer is content to get smaller crops than we should be from the same sized piece of ground.

Just every now and again we have clear skies in this country, but ours, with others in north-western Europe, is one of the cloudiest parts of the world. Clouds, as you know from your science, are most often made of very small drops of water. The steam you see coming out of the spout of your kettle is a small cloud. Very well, then, a cloudless sky means there is little water in the air which is likely to fall as rain. The land in this picture is dry, as indeed it should be for successful harvesting, but, if you lived there you would find that clouds were much rarer, and that it rained less often than it does in this country.

When the farmer has cut and threshed his wheat, he puts it loose, like sand, into a lorry, and takes it to the nearest railway station. There it is sucked up into a tall building shaped like a thick arrow. From the elevator,



71 This is an aerial view of farm land in China. In the foreground are burial mounds. Notice the little strips of garden-like farm land. Do they all bear the same crop? How do you know that a very large number of people live on this land? Where are the farm machines? telegraph poles? roadways? lorries? gasworks?

as it is called, the grain is allowed to flow down again as needed, like sand in an hour glass, into railway vans waiting underneath. You should not think of railway vans as being small or open like some of ours: these are much bigger and made so that the loose wheat does not run out through cracks at the bottom. In them the grain goes to the enormous elevators at the ports on the Great Lakes, and from there the ships which will carry it down to Montreal are loaded. At Montreal it will be loaded into another ship which will bring it across the stormy Atlantic to one of our ports where it is stored until it can be ground into flour.

Will you close your eyes for a moment and try again to see the picture like the one Bill sent to me in his letter? Could you see that stretch of gently sloping wheat land with the combine harvester in the middle of it like a small ship in a great sea? Did you see the two men? Did you look at the clear sky? Turn back again, and look at the picture. Did you get it all right? Good.

Two other countries also have farms very similar in some ways to these in Canada's Prairie Provinces—Argentina and Australia. In fact to-day Argentina's export of wheat is often greater than Canada's. Both Argentina and Australia send large quantities of grain to us. Without that food from abroad you and I would most certainly starve. On the other hand the peoples of Canada, Australia and Argentina would miss our goods very much if we were not able to send them. Once again we must remember that all of us in the world to-day are very closely joined in trade; we all need each other's goods to make our lives as full as they ought to be.

THINGS FOR YOU TO DO

1 If your father has a garden ask him—
  (*a*) Could he make it grow twice as much if he worked twice as hard and spent twice as much time working in it?
  (*b*) Does he plant anything in the autumn? Will it go on growing all winter? Why? Would it in Canada?

2 Make a list and write the meaning against the following words:—prairies, self-sufficient, combine, elevator, freezing-point, threshing. Has any of them more than one meaning?

3 Arrange in their correct order and rewrite the following sentences:
  (1) After harrowing it he drills his seed.
  (2) Often a combine is used for this job.
  (3) Special steamers carry it to ports on the St. Lawrence such as Montreal.
  (4) In spring the prairie farmer hurries to plough his land.
  (5) The threshed wheat is carried to a local elevator.
  (6) He harvests the wheat as quickly as he can in the late summer.
  (7) Big railway trucks later carry the grain to Lake Superior ports.

From My Scrapbook

CANADA RIDE

In 1939, some six months before the war began, an Englishwoman named Mary Bosanquet landed in Canada. She was going to ride across the country on horseback, partly out of love of adventure, partly out of love of horses. How she fared on her journey she tells in a very interesting book called *Canada Ride*.

She crossed the Prairies on that ride, and you may like to read just a little piece of what she wrote about them.

"The harvest is good in this part of the country, and is in full swing everywhere. The fields are patterned with stooks, and at evening the warm farm kitchens are filled with sunburnt men. They are recruited from all over Canada, these threshing gangs. From Quebec and Ontario and British Columbia they come; some hitch-hike, some ride the freights (goods trains), and some join together to buy gas (petrol) and pile into cars. On the biggest farms they do the work with combines. These are surprising-looking inventions . . . They stick out in all directions and go chugging up and down the fields, rattling and roaring and breathing smoke. But they do the work. They cut and thrash all in one operation, shaking down the grain into containers and spewing out the straw behind them as they go. With a combine, a harvest can be cut and thrashed in a fraction of the time taken by the old method, and using far less labour.

We are approaching Brandon, which lies only a hundred and fifty miles from Winnipeg. I ride all day through the gold of the harvest, but at evening I ride through fires. They stand around us like beacons, splashed red against the darkening sky, the fires of burning straw-piles. It does not take long for the flames to devour the yellow heap. At morning there will be nothing there but a dark circle on the ground."*

* Bosanquet: *Canada Ride*, Travel Book Club Edition, p. 103-4.
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CHAPTER XXXVI

WHAT PEOPLE ATE

THE price of wheat came tumbling down after the opening up of the Prairies, and our farmers' loss was the town workers' gain. Along with the improvements in transport which made the importing of cheap food possible, went improved methods of milling the wheat, and strangely enough, this made flour which was a much poorer food. Let us go back first a little way to the beginning of the nineteenth century to see what food people ate then.

Wages in the factories, as we know, were very poor. In the "Hungry Forties"—the years from 1840–50 that is—the general run of workers earned perhaps 16*s*.–17*s*. a week. Some earned more, but many must have earned much less. The children might have been given anything from a shilling to 3*s*. 6*d*. a week. It is true that the money would buy a good deal more in those days than it will to-day, but food was not so cheap as all that. The Corn Laws, you remember, kept out foreign wheat until the price of English wheat was 80*s*. a quarter—or 2*d*. a pound, and that is about twopence cheaper per pound than it is to-day. There was, you see, no cheap Canadian wheat. Even though houses were expensive and rent was high, even though coal was dear, it is true that the workman of those days had to spend a bigger part of his wage on food than your father and mine. Because of this he could only afford to buy those kinds of food which filled him and gave him energy. These were bread and potatoes, and in some places oatmeal. There was little meat to be had: refrigeration had still to be invented and in spite of Thomas Bakewell and "Turnip" Townshend there was too little meat for poor people to be able to buy much of it. In the country, farm workers usually kept a pig or two—but they sold the pork to the butcher. In the towns a small piece of bacon or bacon fat might be used with potatoes or bread to make them more tasty.

This is the way a country family of eleven people who earned altogether 17*s.* 6*d.* spent their money in 1840:—

"They had potatoes from an allotment rented at about 2*d.* a week, and in addition they bought:—

121 pounds of bread
½ pound of bacon
1 ounce of tea
¾ pound of soap

Rent was 1*s.* 3*d.* and fuel 1*s.* 8*d.* Their food then was bread, water and potatoes, flavoured with a little bacon fat."*

How many pounds of bread per person is that each week? Some of the eleven were children, of course, who did not eat so much as their older brothers and sisters and father and mother. How much bread do *you* eat each week? It was because of this that it was very important for these people that the price of corn should be as low as possible. It gives us the reason why the Corn Laws were so bitterly hated by the town worker at this time.

The Corn Laws were repealed in 1845, and the price of corn fell. By this time railways had been built all over the country, and roads had been so improved that a penny post had been started. Better transport together with better wages in the factories made it possible for the worker to buy more and better food than he had been able to do in 1800. Then from 1875 onward came a trickle, a stream, and at last a flood of wheat from Canada. All this time the number of people in the country had been growing, but supplies of food from abroad had been keeping pace. Unhappily machines also made it possible to give us white bread. Yes—unhappily, as you shall see.

We eat wheaten bread because we prefer its taste to that made of barley or rye. We eat white bread partly because we like the look of it, and partly because it was first used by wealthier people. It was a badge of the well-to-do, and ordinary folk wanted to have the same. They did not think, or if they did in those days did not care, that the more wealthy people ate less bread, and more of other things.

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* Sherwood Taylor: *Century of Science*, 1840–1940, p. 176.
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Now, in the wheat grain, the outer layers contain an important vitamin—Vitamin B. But the outer layers, as you know, are brown. If you want white bread you must mill the wheat carefully to take away the brown outer part. Before this time—1862—windmills were commonly used to drive great flat millstones one over the other, and the wheat was crushed between them, but the brown outer part was left with the meal. After 1862 roller mills, steam driven, came into use, and it became possible to make whiter flour. Unhappily, vitamins and some important minerals such as calcium and iron were lost by this kind of grinding.

Together with tea, and cheap jam, the white bread became the chief foods of the poorest workers. The effects are beginning just now to be left behind as the older people die. My Uncle Allan, and hundreds of thousands of his age, has bow legs, and his teeth went bad when he was quite young. Bones and teeth were soft because calcium was missing from the chief food. Because there was too little iron they also suffered from anæmia, a disease which makes people thin and pale, and very quickly tired, and one which can most often be cured by medicines with some form of iron in them.

We know to-day that if people live on good mixed foods, which together have in them some of all the things we spoke of in Chapter XXV, the lack of minerals and vitamins in the bread does not matter very much. Milk, fruit and vegetables make up for them. In his home in Oldham my Uncle Allan had no garden for fruit and vegetables. He worked long hours away from the sunlight which would have helped his body to make Vitamin D for himself. Canned fruits were rarer—in any case fresh foods are really better for you—and more expensive sixty years ago, and meat was still not as often eaten as it is to-day.

My father tells me that when he was a little boy—that's more than sixty years ago now—living in a small Derbyshire village, there was no butcher's shop. A travelling butcher came round once a week. I asked him if he had meat every day. "No," he said. "We had it two or three times a week. For breakfast I used to get oatcakes (made out of oatmeal) spread with dripping. For dinner we sometimes had a rabbit, sometimes fish, and sometimes meat." He says that people then often would not eat frozen meat because they thought it must be bad.

Ships and refrigeration made it possible to bring more different kinds of food into the country, and people began to get chilled and frozen meat, fish and fruits, such as apples from Canada, bananas from the West Indies and Central America, and oranges from Palestine, South Africa and California. Food also became less expensive as the condition of the working people improved, and so the part played by white bread in our food became less and less important, and we made up for what was missing in the bread by eating other things. Your mother will remember, even if you do not, that during the war our bread was brown again, and that was because other things such as meat, fruit, milk, cheese and eggs were very, very scarce, and it was necessary to make up as far as possible for them by milling brown flour containing important minerals and vitamins.

THINGS FOR YOU TO DO

1 Ask your mother if she can tell you how she spends her housekeeping money each week. Is there any food of which she would buy more if she could afford it? Compare her answer with the farm labourer's weekly budget. (See p. 204).

2 Would your mother prefer to buy fresh, chilled, or frozen meat? Why?

3 Look in the windows of your butcher's shop. Are there any advertisements showing where some of the meat he sells comes from?

4 What foods have the following countries or towns before their names:—
Spanish, Brazil, Jaffa, Cuban, Bovril, Worcester, Cheddar, Stilton, Yorkshire. Why are these places famous for their special kinds of foods?

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CHAPTER XXXVII

A VISIT TO A FARM

IT WAS already getting colder as I set off for Westfields Farm late in the afternoon one day in January. The sun was slanting down behind the trees on my right. Rooks in a tall elm were caw-cawing to one another, and a good way off a dog barked. Sounds came very clearly through the still frosty air. Though winter is supposed to be a dead season in the country there was plenty to see and to think about, and it didn't seem very long before I was opening the white gate to the farm drive. A couple of minutes later I was ringing the door bell. Mrs. Houson came to ask me in, sat me down in a chair by the fire, and went off to find Mr. Houson. You see, I had come to the farm because I wanted to know about it so that I could tell you later on.

"Well, Mr. Houson," I said, after chatting for a few minutes, "if you've got to go and milk at twenty-past four we shall have to be quick about this. I've got so much to ask you. Do you think we could start at the beginning? How big is the farm; what kind of soil is it, and so on?"

"Well," said Mr. Houson, "we've got 233 acres here of mostly heavy darkish brown clay land. At the moment ninety-five acres are ploughed, but normally we wouldn't have more than twenty: all the rest would be grass."

"By 'normally' I suppose you mean 'before the war,'" I said.

"Yes, before the war we kept a bit ploughed for root crops, clover and oats for the cattle, and we used quite a lot of imported feeding stuffs for them as well. But now! I can never remember as much ploughed land as we've got now."

"What about rotation, Mr. Houson?" I asked. "The boys and girls have learnt about that, and I think they would be interested to know how you manage it."

"Well," said Mr. Houson, slowly, "it's a bit difficult:

we do and we don't, so to speak. At the moment we are made to grow so much wheat by the government. Now, if I followed every wheat-crop with roots I should have much too many for the number of cattle I can keep on the grass I've got left. So I take perhaps three crops of wheat off the same land three harvests following, and then plant clover or beans or roots for a year to give it a rest. But you know, even to-day we sometimes give land a complete rest—leave it fallow, as you might say, for a year. One thing we shouldn't do is to put in crops of clover or roots following one another. Normally on our bit of ploughed land we'd follow something like a four course rotation—wheat for straw and grain: roots for feeding to stock, oats for straw and stock, and clover for winter fodder."

"Does that mean," I asked, "that you are getting poorer and poorer wheat crops?"

"No," Mr. Houson replied. "You can plant the same crop on the same piece for a few years without its making much difference. We've had very good crops off this land without much trouble because it hadn't been ploughed up—oh, for donkey's years."

"About how much is a good crop?" I wanted to know.

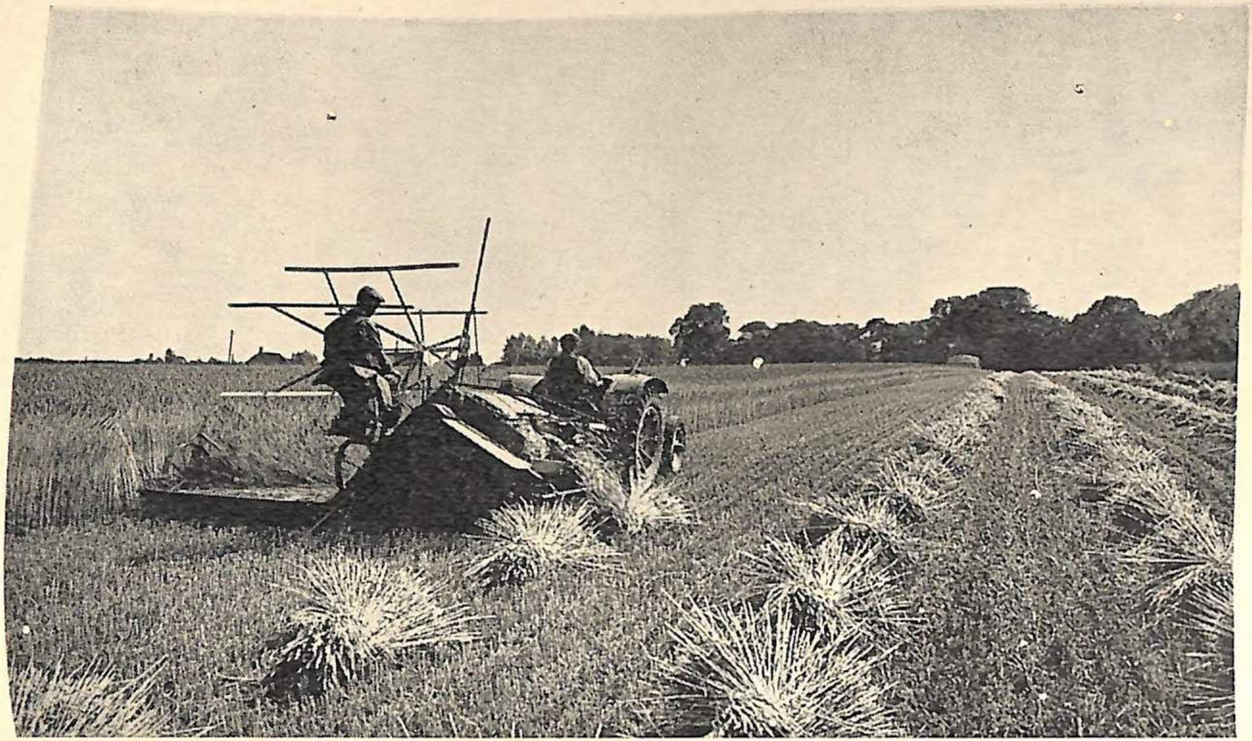
"Oh," he said, "let's see—40–45 bushels to the acre, or, as we'd say it now, about 26 cwts."

"So the war has made quite a bit of difference to you, has it?" I said.

"Yes," he replied, "in more ways than one. We've got a tractor now—a Fordson—but we could not really do without the three horses we still keep. They are more suitable for some jobs, I think. Then this year I hired a combine from my cousin, who bought it during the war, to do my harvesting."

"A combine?" I said.

"Yes, you know the sort of machine they've been using in Canada for years. It cuts the ears and threshes them all at the same time. Of course, it leaves the straw standing, so you either burn that off, or if you want it



72 Harvesting wheat on an English farm. What is the machine called which is being used to cut and bind the crop? Notice how the sheaves are dropped by the machine. What is the purpose of the paddle-wheel like fitting?

you can use a ' baler ' which picks up the straw after it has been cut in the usual way, and packs it into big square bales."

" What did you do with yours this year ? " I asked.

" We burnt it off. The ashes are quite good for the soil, and we did not need it for cattle-bedding and manure as we had plenty left over from last year."

" How else has the war affected you ? " I enquired.

" Well," he said, " another thing is that we can't have all the special cattle feed we used to be able to buy."

Here Mrs. Houson, who, like most farmers' wives, is very interested in her husband's job, and who had been listening to our conversation, said, " Cows are rationed, too, you see. You have coupons only for the amount of milk you get. More milk—and after a time, more coupons—but now they get very little 'cake.' "

" Cotton seed cake ? " I said quickly.

" Yes, cotton seed and other kinds, too," she went on. " They have to make do with oats, clover, swedes, mangolds and hay."

" How much milk are you getting now ? " I asked.

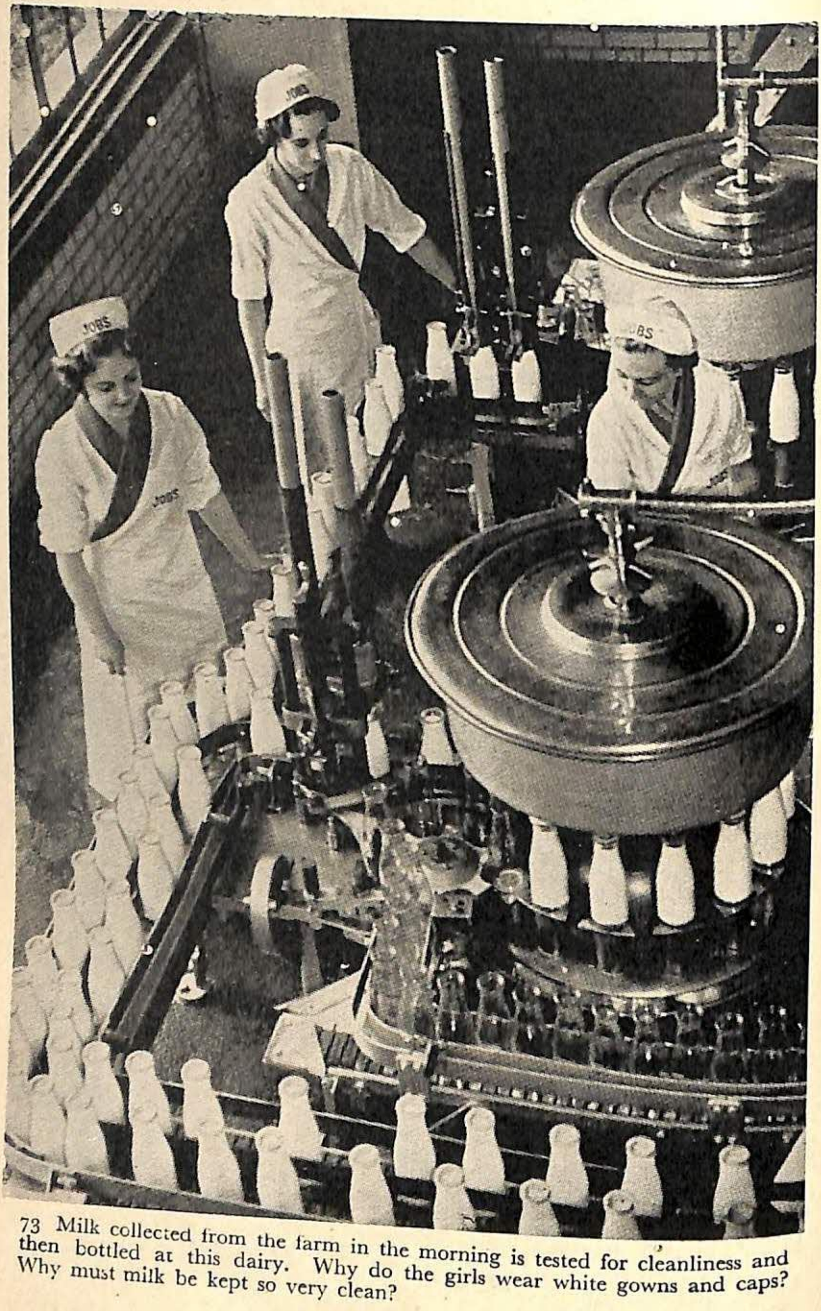
" We've got twenty cows in milk and so we're getting about thirty-five gallons a day now. Of course, in spring when we can get them out of the sheds again we'll be getting sixty to seventy gallons."

" Is it any special grade of milk—Grade A or T.T." I wanted to know.

" We don't call it Grade A now: it's 'Accredited.' Yes, ours is Accredited," said Mr. Houson.

"What does that mean exactly ? " I asked.

Mrs. Houson said, " It means that the County Council sends round inspectors to take samples of the milk—they were in this morning as a matter of fact: the milk has to have so much fat in it and be free from certain germs, and so on. They issue a license for that, and then of course the vet. calls, doesn't he ? " she said, speaking to Mr. Houson.



73 Milk collected from the farm in the morning is tested for cleanliness and then bottled at this dairy. Why do the girls wear white gowns and caps? Why must milk be kept so very clean?

"Yes," he said, "the vet. calls every three months or so to see that the cows are healthy."

"What happens to your thirty-five gallons?" was my next question.

"Oh," Mr. Houson replied, "we put that in churns out on the roadside, and a lorry comes along about 8.30 each morning and picks up the full and drops us empty ones. It's a bit easier than in my father's younger days when they had to drive the two and a half miles into Droitwich Station with it in a float. If they looked like being late for the train—well, there was a scurry round. It still all goes to a dairy in Birmingham."

"That'd be about seventeen miles away, I suppose," I said.

"Yes," he went on "about that. Then they pasteurise it, bottle it, and send it out to customers—and to schools," he added, nodding at me.

THINGS FOR YOU TO DO

1 If you know a farmer will you ask him some of the questions I asked Mr. Houson, such as "How big is your farm?" "How much of it is grassland?" "How many cattle, sheep, pigs, have you?" "Have you electric supply in the farm?" "Do you use a milking machine?"

2 Try to visit a farm. Notice what crops are growing. Ask if there is any special reason why they are growing there. For example, are the meadows near a stream?

CHAPTER XXXVIII

AN ENGLISH FARM (*continued*)

74 The Farmer

MR. HOUSON went out to fetch a map of the farm—the one you can see on p. 216 to which I have added the way in which each field is used this year. It was in a book which advertised the sale of the farm, and five others close to, or next to it in 1919. That was just after the First World War. Food had been even scarcer then than it has in this last war: rationing began much longer after war broke out, and once, in 1917, the country was only three weeks from starvation because of the submarines. Scarce food meant high priced food, too, and the land which grew it was very valuable, so many owners sold some of their land at this time. The notice of the sale shows that Mr. Houson's farm had then less land ploughed than now: only forty-nine instead of ninety-five acres.

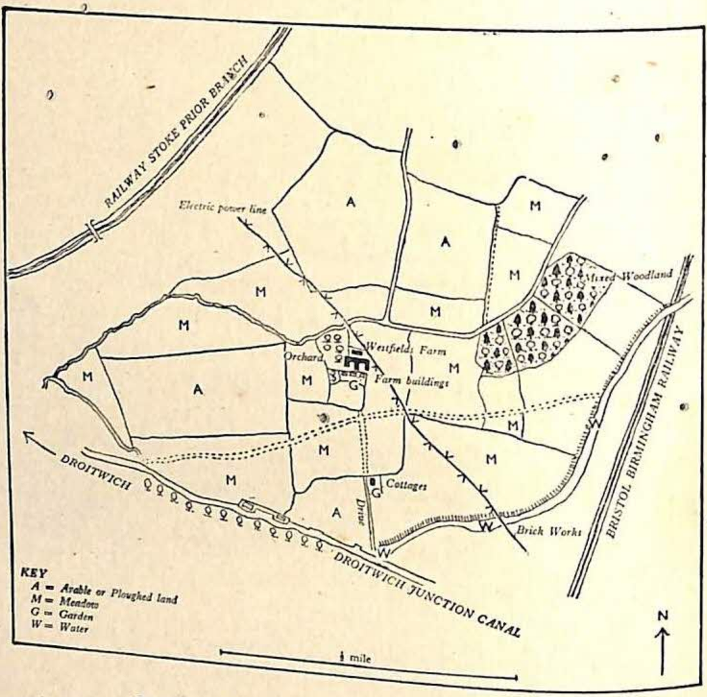
Marked on the map beyond the canal is a brick works, and when I asked how it was that the farmhouse and buildings had electric lighting Mr. Houson explained that a power cable (marked on the map for you) ran through the farm to the brickworks passing very close to the back of the buildings. I knew that it was quite unusual to find a farm in this country with electric power. I wanted to know if they had a milking machine as they had electricity, and I was told that they had not. The reason is that Mr. Houson still has working for him four good men: one has been there forty-four years, one twenty-seven, and another twenty: they are all used to milking by hand, but, as he said, when these men go a milking machine will have to be put in because there are so few young men to-day who want to work on the land.

Three of the men live in the cottages marked on the map near the bottom of the farm drive. The cottages belong to the farm, and they looked quite good ones—bricks from the brickworks and tiled roofs—but I was told that they had been built before Mr. Houson's grandfather came to the farm in 1882. They are not fitted with gas or electricity. Oil is used for lighting and cooking. They have no running water: what they need they have to pump. Each cottage has a fair-sized garden with a pig-sty. The men keep some poultry and they can buy milk from the farm at wholesale prices. They usually grow a row or two of their own potatoes in the potato field.

I asked Mrs. Houson to give me the lady's point of view on difficulties. " It's a bit awkward," she said, "to get about from here. It's a good two miles to Droitwich, and there are no shops nearer. There are no buses except one which goes through to Worcester—about nine miles away—on Mondays, Wednesdays and Fridays. It leaves here about ten in the morning and gets you back about half-past four."

I was interested to know how the children got to school.

" Oh well," she said, "there's only Margaret from the cottages, and she goes by the school bus into Droitwich.



Based on the Ordnance Survey Map, with the sanction of the Controller of His Majesty's Stationery Office.

75 This is a map of Mr. Houson's farm, two miles from Droitwich, in the parish of Hanbury. Notice how many meadows Mr. Houson uses as pastureland for his cattle compared with the number of fields on which he grows crops. You will also see an electric supply line which provides power for the Brick Works and Westfields Farm. For what purposes will the railway lines and canals be used? Look at and remember the signs for railways, canals, orchards, mixed woodland, electric supply lines, roads (shown by a double line) and paths (shown by dotted lines). Could you draw a map of your house in its district, or that of a nearby farm showing how the fields are used? Your teacher will tell you the symbols for churches, bridges and other signs you may need, or you can find them yourself from the key of an Ordnance Survey map.

We've not felt quite so cut off from everything since Mr. Houson's father had the telephone run up to the farm—when was it now? 1933, I believe."

For the first time in his memory there were, Mr. Houson said, no sheep on the farm. Usually they mixed in a bit of everything, but the sheep were sold off after the heavy snow in 1947 when so many sheep were killed on the Pennine Moors and the Welsh mountains.

That led us to talk of the old days. Mr. Houson's grandfather had come to this farm in 1882. "It had been let go to rack and ruin for two years before that," Mr. Houson said. "Nobody lived in the house, and when they first came here the farm was overgrown plough land." We worked out that 1882 was nine years after the beginning of the Great Depression, as it was called, when partly because of the opening up of the prairies, the price of corn was too low to make it worth growing on land like this, and Mrs. Houson remembered hearing that grandfather had sown the land down to grass, and had begun to keep dairy cows.

Grandma had worked very hard in those days making cheese and butter, and looking after the poultry, and taking things down to Droitwich and Worcester markets. It was more difficult to move liquid milk about then.

"That means then, Mr. Houson," I said, "that the cowsheds go back to 1882 or 1883."

"Yes," he said. "They are old buildings. They're still sound enough, but, of course, they're not just as good as they could be. The cooler for the milk is a long way from them, and it's a bit of a waste of time to have to bring the milk up to it. The house and stables and other buildings are even older than the cowsheds. Yes, my grandfather was the first man to sell milk in this parish."

Mr. Houson had to go and help with the milking—the cattle are milked twice each day at about 6.30 in the morning and between 4 and 4.30 in the afternoon, summer and winter. In between times the farmer and his men do dozens of different jobs—cleaning out cowsheds, and pig-sties, feeding the animals, ploughing in the autumn, harrowing, planting, rolling, hay-making, harvesting, getting in root crops, trimming hedges, opening the drains in the fields, and doing odd jobs about the buildings. I sat awhile in the firelight talking of this busy life, and then, before I left for home I asked if there was any message from the farm for you.

"Yes," Mrs. Houson said, "you can tell the boys and girls that we had a number of boys from a Birmingham Life Brigade staying here last summer. They had a very good time, too, and also, in between swimming in the canal of course, they did some very useful work for us. Tell them we hope they'll be able to enjoy the same some day, and ask them, please, to look after the flowers and birds in the country when they do come."

It was colder still on the way back, but my mind was very busy. "Let's see," I said to myself, "Mr. Houson's family has felt all the great changes which have altered English farming in the last seventy years. First the land was overgrown with weeds when wheat became too cheap to be a good crop to grow. Then grandfather and grandmother had made butter and cheese, and even that had gone out as Danish and Dutch dairy goods had come in; so the farm was turned over to milk producing, and it's been like that ever since except in the two world wars. Well, I don't know whether we towns-people ought to let all that ploughed land be seeded down again. It looks as though we've got to go on growing more food for ourselves and getting less from abroad from now on."

CHAPTER XXXIX

THE FARMER'S YEAR

MOST people in Britain to-day live in the towns. We usually think of the weather as being fine or as being a nuisance, and we often do not realise that there are over half a million people who live much closer to natural things than we do, to whom weather is very real and very important. Many of us who are townsfolk have allotments or gardens: then we often know that it is too dry for our crops to grow, but our plots are small enough for us to be able to carry water to them in a can. The farmer cannot do this. Then, too, we may start some of our plants in a frame or a greenhouse: this again the farmer cannot do. He must be at the mercy of the weather in spite of all that can be done to help him. He fits his work into the seasons: he sows his crops and reaps his harvests, good or bad, according to the time of the year, and this is true, whether we speak of Canadian, Argentine or British farmers. All some of us realise is that at certain times in the year some things are more scarce, but thanks to easy transport and refrigeration, there are few times when we have to do without the produce of the summer, our own or somebody else's.

Suppose that it is early springtime. The days are getting longer: you have tea in the daylight, and soon there will be no need to have breakfast by gas or electric light. The air becomes warmer, and the first buds begin to open, and the first mating birds to sing! As the hedges begin to grow green, so the wheat planted last autumn begins to shoot up. Some land is ploughed, and the tractor chugs away sending smoke-rings out of its exhaust-pipe as it pulls the four-furrow plough: or a team of sweating horses drag a single or double furrow plough across the field. Crows and other birds follow, fighting for the worms turned up by the ploughshare in the shining rows of the furrows. Soon there will follow harrows and drills planting oats, beans, barley, mangolds and swedes. The cows begin to stay out of the sheds all day to browse lazily in the new growth of grass. They begin to give more milk. The little black-faced lambs, with their long tails and short curly wool, frisk and play "I'm the king of the castle" on any little mound in the field, while the old ewes in heavy grey fleeces go quietly on with their feeding. Calves are about already, staring at us, and warily putting their hornless heads down and splaying their forelegs ready to butt us if we look threatening as we go by.

Towards the end of June the hay should be ready to cut. The mowing machines click and whirr round and round the fields leaving a smaller and smaller patch standing in the middle. It will be raked and turned over to dry thoroughly in the sun for if it were put wet into a rick there would be risk of fire. The hay is pitched up on to tall wagons with pitchforks and carted off to the rick-yard. Often the farmer's boys and girls ride in the deep sweet-scented hay. If it rains after the hay is cut the farmer has to wait for a few days to let it dry out again before he can start carting.

The hay harvest finished, the oat harvest begins. The binder moves round the fields cutting the grain and binding it into bundles. The bundles are stood up together in what are called sheaves or stooks—the sign you see on the Co-operative wholesale packets of various kinds—to dry out thoroughly in the sun and wind. Hay cannot be dealt with like this because the stalks of grass are too short and not stiff enough to stand. Nowadays the binder may be replaced by a "combine" harvester which not only cuts the heads off the grain but which threshes at the same time. Ordinarily the stooks are carted to the farmyard and built into stacks, and the grain is not threshed until later in the year when work in the fields is less pressing, or is held up by bad weather. After the oat harvest, wheat and barley follow when the long days of summer begin to give way to the mellow, soft days of early autumn. Soon apples and pears will be ripe in the orchard. Blackberry time, too, comes and goes. A little later the children gather hazelnuts from the hedges.

The root crops have still to be got in. The mangolds, swedes and turnips are pulled out of the ground "topped," that is, the leafy tops are cut off, and the roots are tossed into heaps from which they are later thrown into a cart with the help of a fork specially blunted with little metal balls at the ends of the prongs. They are carried away and, if they are not wanted at once, are built into a long clamp which is thatched over with deep straw to protect them.

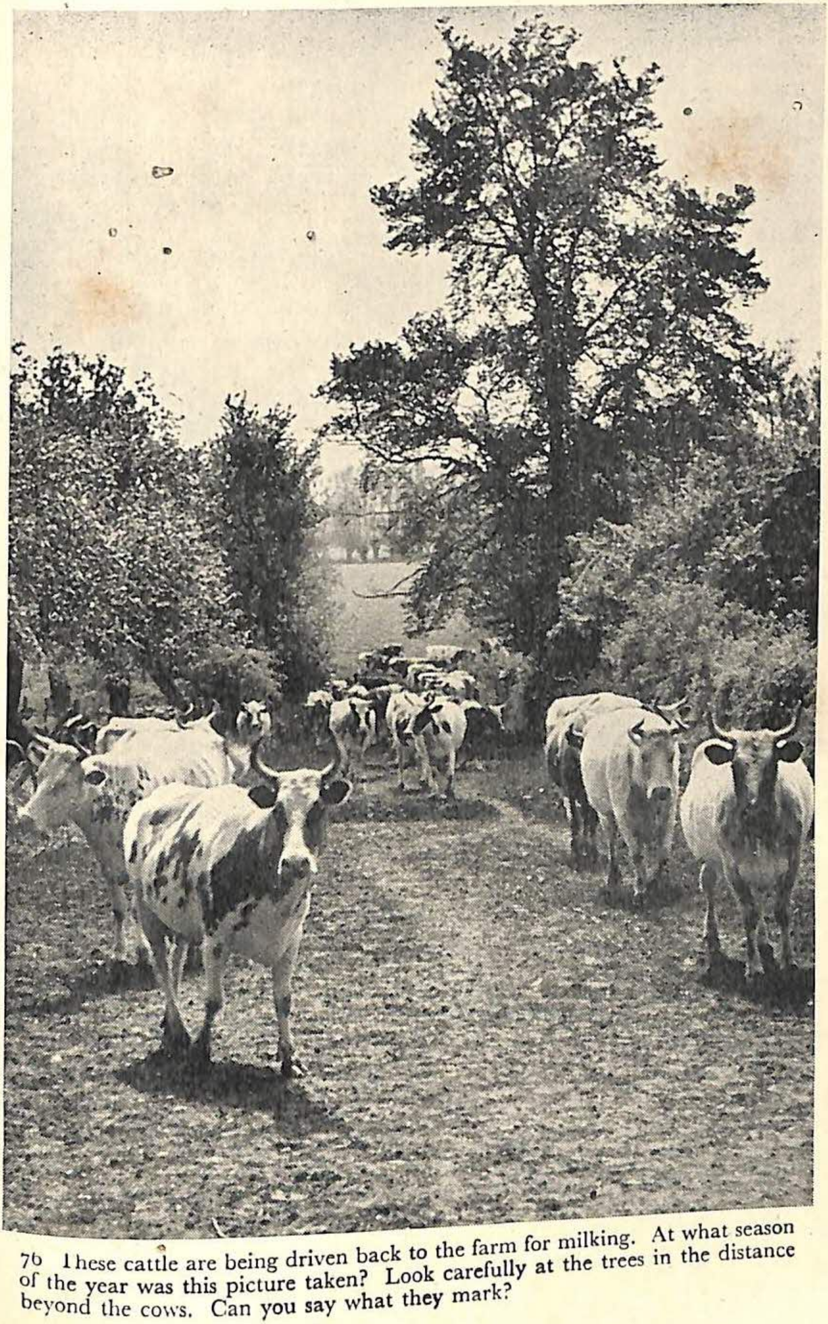
In November, autumn ploughing begins. The farmer sows his winter wheat. In a few weeks the tips of the new wheat will begin to show bright green against the earth: the seedlings will go on growing slowly through our mild winter ready to put on a fresh spurt in the springtime. The cattle spend much of the day indoors now, feeding on oats and hay, clover and beans, swedes, mangolds and kale, and a bit of special seed cake when they can get it. They are driven out to the pond to drink, though modern farms often have water laid on to the cowsheds and each cow may have a little bowl in her stall. When she pushes her muzzle into the bowl she knocks down a sort of weight which allows water to well up into the bowl. Perhaps the threshing gang will arrive and the grain stacks will be opened again so that oats, barley and wheat can be put through the machine and the grain knocked out of the ear. Once it used to be done by hand with a flail—two pieces of stick joined in the middle with a piece of leather: the grain was put on the floor and beaten with the flail so that the grain was knocked out of the ear. Often in China a bunch of grain is knocked against a sloping board: the straw stays in the beater's hand but the grain falls down the slope into a box or basket.

Whether it is winter or summer the animals on the farm all have to be fed and cared for. The cows have to be milked twice a day. The pigs get their swill and the fowls which scratch in the rickyard for grain or peck the cabbage in the garden, get their meal. There is never any time in the farmer's year when he can say, "There is nothing more to be done; I'll go for a holiday." The factory wheels may stop, but the cows have to be milked: the office may shut down, but the hens go on laying. Yes: it is a full life but I doubt if most of them would willingly change with your father and mine in the town, though neither would get on very well without the other, would he?

THINGS FOR YOU TO DO

1 Make a calendar of the farmers' year.

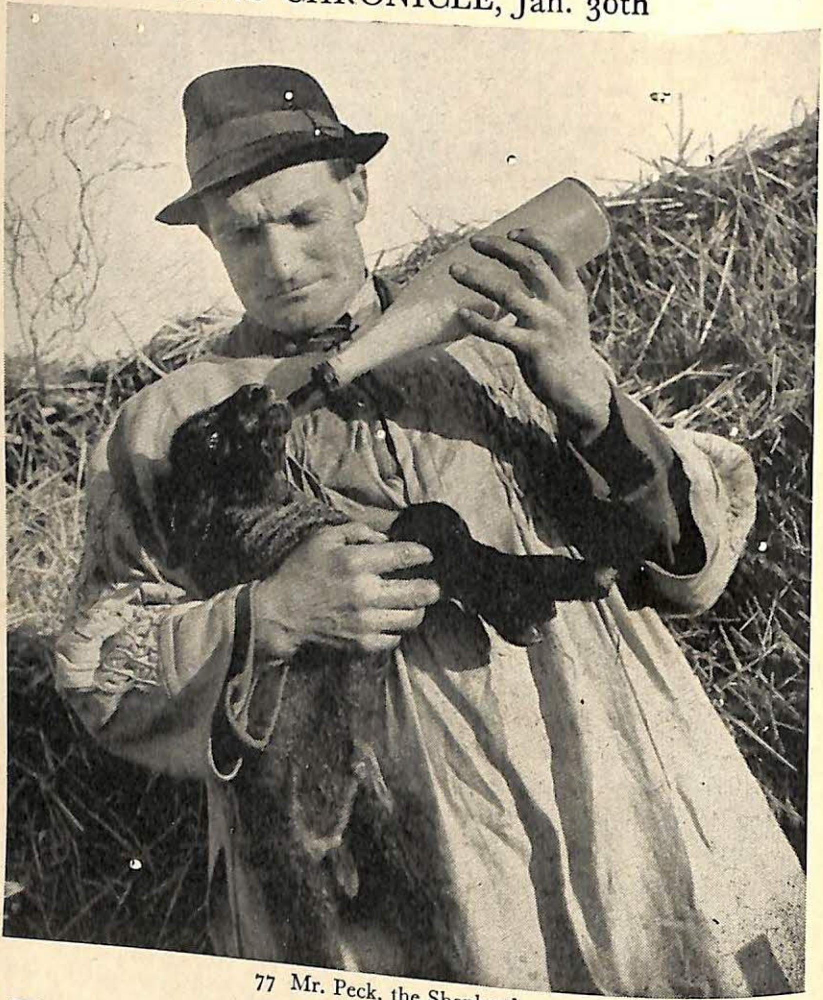
2 (*a*) When does your father dig his garden? Why?
  (*b*) When does he grease-band his trees? Why?
  (*c*) Why does he not grow wheat in your garden?



76 These cattle are being driven back to the farm for milking. At what season of the year was this picture taken? Look carefully at the trees in the distance beyond the cows. Can you say what they mark?

From My Scrapbook

NEWS CHRONICLE, Jan. 30th



77 Mr. Peck, the Shepherd.

Do you see the kind of gown Mr. Peck is wearing? This is called a smock, and the girls will be able to find out what "smocking" is from their sewing lessons. What food will the lamb be getting besides milk? Near what is Mr. Peck standing in the picture?

CHAPTER XL

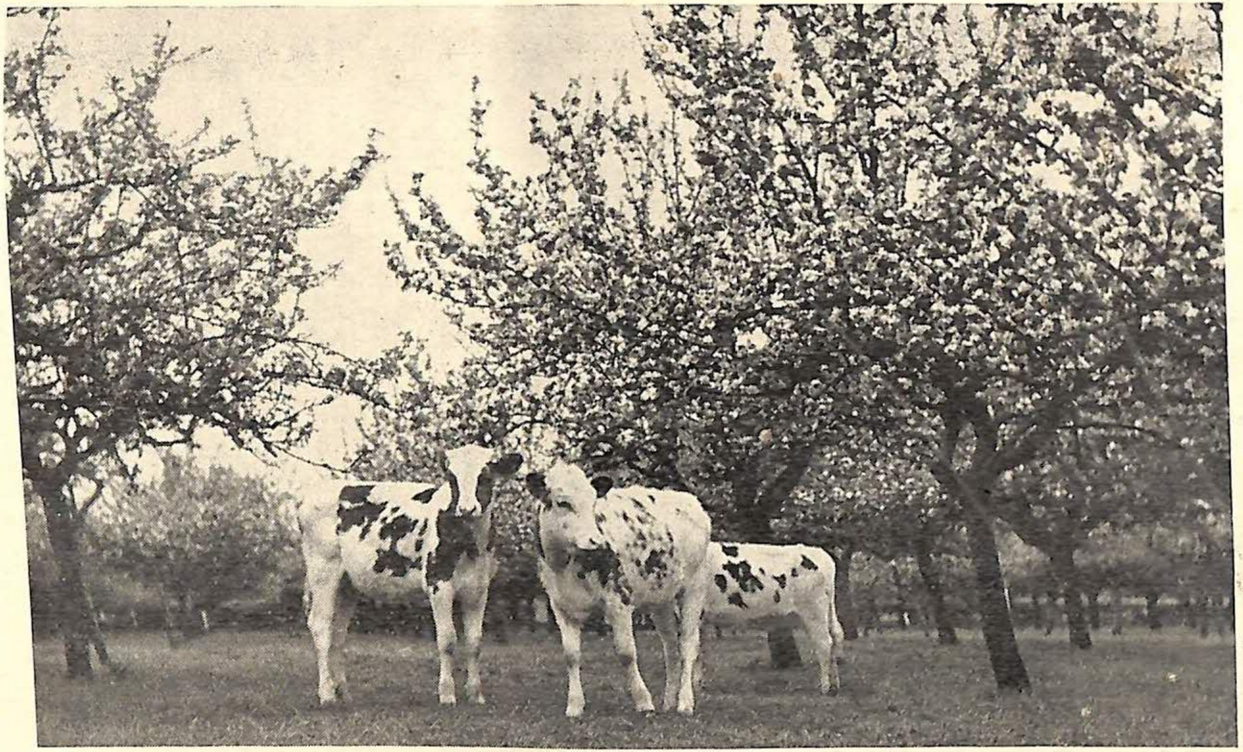
OTHER FARMERS AND THEIR WORK

THERE are many farms in England rather like the Houson's. They are called mixed farms because both animals and crops are kept and grown there. Though there are many like it, there is none exactly the same, and if we travelled all over the British Isles we should find that in different parts the farmer's work was made to fit in with his different surroundings. In the chapter on Woollens we spoke of the moors. They are, we said, high rough country covered with bilberries and heather, bracken and gorse, and short wiry grasses. Only down in the hollows sheltered from the wind will trees grow, and it is there too that we should find the stone-built whitewashed houses of the sheep farmers. On these high moors there are no hedges, but dry stone walls have been built instead. They are called "drystone" because the flat pieces of stone of which they are made have no mortar between them. They are often built high so that the sheep cannot jump over them. They are to keep the sheep away from such crops as are grown on the farm in the sheltered hollows or valleys. The fields are generally small, and they grow oats, swedes and mangolds, which can be used for sheep in the winter months though porridge and oat-cakes are, with potatoes, an important part of the food of the people. Right up on the moors there are no walls at all, and here in the summer months the sheep roam where they will, but in the harsh, wild winters they are brought down nearer the farms.

Perhaps the busiest times of the sheep-farmers' year are at lambing in the early spring and shearing in July. The shepherd and his dog are out and about at all hours when the ewes are having their lambs. Sometimes the sheep are folded down by the farm where the new-born lambs can be sheltered from the wind by hurdles laced with straw and built up into square enclosures. In July, when the weather is warm, the sheep are driven down from the high moors into the fields by the farms. Neighbours often come to help one another with the work of shearing them, which, unlike that in Australia, is done out of doors with hand shears. These are not like garden shears with which you have to use both hands: they look like a U and the insides of the legs are made into scissor blades. Holding these in one hand, the shearer has the other free to hold the sheep still on its back between his knees while he shears it. How small the sheep are without their heavy fleeces and how they run shivering away, only to be caught and dipped into a special bath which has in it a poison for killing the ticks and other insects hiding in the short wool. The fleeces are baled and sent, as you know, to the mills down in the valleys of the West Riding or the Tweed. You would find this kind of farm and its special work on all the mountainous parts of our country as well as on the long hill ranges of the south and east—the Downs, the Chilterns and the Cotswolds.

In this gentler south-eastern part of our country there are also broad valleys divided by slow running muddy rivers, beside which willow trees stand, looking in the winter like cabbage stalks and roots planted upside down. Here, and especially near the big towns or the railways which lead straight into them you would often find that the farmers worked mostly to produce milk—milk for you and me. You might also find, notably in the "Garden of England," the County of Kent, that the land was planted with orchards or dug and planted much as your father and mine dig their gardens and plant them for vegetables.

From Birmingham, where I once lived, people used, in the springtime, to drive out in their cars to Evesham twenty-five miles away. In the middle of that town is an old abbey church with a tower from the top of which, in blossom time, you could look out all around you for several miles over a white sea of fragrant plum-blossom. It was a very beautiful sight. You might think that once



78 A scene on a farm not far from my home. When was the picture taken? What kind of trees are these? Is it usual to grow grass between the rows of trees in an orchard?

they were planted, trees and bushes would need very little care, but you would be wrong. In the autumn the trees are grease-banded or limewashed to prevent insects crawling up the tree from the ground. Always the trees and bushes are being sprayed to keep moths and grubs from getting at the fruit. Often the bushes are protected from birds by netting strung over them. Week after week, from about the middle of June, fruit-picking goes on. Gooseberries and strawberries are first, then cherries, raspberries and currants. In August the plums are picked, and in September and October the apples. So the grower's summer is a very full one. He works long hours picking, grading perhaps, and packing. He loads hampers and baskets on to his lorry or cart and rushes them off to the station a few minutes before the train goes out because he wants his soft fruit to get to market fresh and in good condition.

The work in the gardens is much the same as in yours and mine, except that the vegetable grower may have a small plough, a seed drill, and a cultivator driven by a motor-bike engine to help him with his 5–20 acre patch. Most of the early flowers and vegetables—the new potatoes, peas, strawberries and daffodils come from the south-west of our country—from the little sun-warmed patches of land which nestle down between the rocky sides of valleys in Devon and Cornwall.

Speaking of flowers reminds us of Holland. Do you know that there is a part of England called Holland? Look at your atlas map for the county of Lincoln on the east coast. Holland is the part of the county nearest to the Wash. All round the Wash is that part of the country which we call the Fens. You may have heard of it in connection with Hereward the Wake, but the marshy patches have now been drained, and most of the land here is very fertile. In the days before the war you might, in springtime, have seen fields carpeted over with tulips and other flowers, but just now the land is too much needed for growing wheat, potatoes, and sugar-beet. It is very flat country, and the soil is very rich. The amount of rain is small, and it is the nearest to the vast Canadian prairies we could see in this tiny country. In some parts there are no hedges at all because cattle and sheep are not kept; only crops are grown. This is the most important part of Britain for producing wheat, sugar-beet and potatoes.

Some other parts of our country are famous for beef cattle. These are especially important in Herefordshire and Aberdeenshire. You will remember that Herefordshire cattle are still sold to Argentina so as to improve their herds there.

In the last thirty years or so much land in this country has been used for growing fruits or vegetables, or taken for poultry farms. That is because we have begun to ask for more and more of those foods which protect us from illnesses like colds and influenza, and also because, even with quick transport and refrigeration, farmers in other countries cannot get soft fruits and liquid milk to our markets in good condition. They can send us hard fruits like apples and pears and carefully packed thick-skinned fruits like oranges and grapefruits. They can send us butter from as far away as New Zealand, and cheese from Canada, but our farmers and growers still have the great advantage of nearness over all of them for the selling of soft fruits and liquid milk in our markets.

THINGS FOR YOU TO DO

1 Make a map of England and Wales. Show where the various kinds of farming spoken of in this chapter are carried on.

2 Perhaps your teacher will let you show how you would hold a sheep while you were shearing it.

3 Could you write a little story about Bob, a sheep dog which saved a lamb that was lost?

4 What are—drystone walls, gorse, hurdles, ticks, grease-bands, Fens, influenza, refrigeration?

CHAPTER XLI

MY SISTER'S BUDGET

I WANTED to know how my sister spent her housekeeping money each week and she gave me the list which is written out below. As you will see, it is for two people only—for my sister and her husband. To give you some comparison, I have written out again the list of things the farm labourer of 1840 bought with his money, and his, you remember, was for eleven people. Here are the two lists side by side:—

	My Sister's: 1948 (for two people)			Farm Labourer's: 1840 (for eleven people)			
	£	*s.*	*d.*	£	*s.*	*d.*	
Rent		16	11		1	3	
Fire		9	2		1	8	
Milk		1	8				(from farm)
Bread		9	5		10	0	(121-lbs.)
Grocery	1	7	0		1	0	(½-lb. bacon)
Fish		2	6				
Meat		2	0				
Greengrocery		5	0			2	(Rent for garden)
Sundries	1	3	5		3	5	Tea and Sundries
	4	17	1		17	6	

In my sister's list I have included with bread, such things as cakes, pastry, buns, and anything else you might buy at a baker's. Yet it is quite clear that she spends only a small part of her housekeeping money at the baker's as compared with the amount the farm labourer spent on bread. He spent more than half his money on bread and most probably he bought flour for his wife who did the baking herself.

The second thing you might notice is that food to-day is much more varied. Fish has come into it mainly because of quick, cheap transport and refrigeration. The grocery includes many different things from dried fruits, such as raisins, sultanas and prunes, to sugar, bacon, cheese, eggs, butter and margarine according to the ration book allowances. Meat is also shown in my sister's list, and in the 5*s.* spent at the greengrocer's are many things the labourer had never even heard of, such as oranges, grapefruit, and (if they can be bought) bananas.

The word "sundries" again covers many little sums paid out for things the farm labourer would never have bought, or might never have heard of. Such things are newspapers and weekly papers, 2*s.* 1*d.* I don't suppose the farm labourer could read anyway. Telephone 2*s.* The telephone was not invented until 1876. Insurance 4*s.* He would not know anything of insurance. Clothes 5*s.* The farm labourer's were almost certainly in a very poor state, and his children most likely did not wear boots.

Do you notice, too, that the cottage in which the farm labourer lived had eleven people in it? You may remember that my mother's photograph on p. 100 shows five people, and that there are two other brothers, Edwin and Fred, who are not shown there. That makes, with my mother's father and mother, nine people living in the same house, and that was in 1891. My mother had only two children, and only one of her sisters and brothers has had three children; the rest have two or none at all. My sister has no children: I have no children. This shows, doesn't it?—that the number of people in the country was growing very, very quickly during the nineteenth century, but people have been having smaller families for some years now, so there are many more older people and far fewer children than there used to be.

There is just one thing more I want you to see for yourselves from the two lists. Eleven people in 1840 had altogether between them 17*s.* 6*d.*; to-day two people have £4 11*s.* 0*d.*—that is not counting what is saved. My sister has a good, cheap house, which she and her husband were beginning to buy before the war. It has gas, electricity, a pleasant bathroom and running water. In the house there is space and comfort and quiet; there are good furniture, books, and a wireless set; there are carpets on the floors and pictures—not very good ones I think—but pictures on the walls. The farm labourer in 1840 probably had a very small thatched cottage with damp plaster walls: if he wanted water he pumped it from the well or fetched it from the stream. His house was lit by a candle which was put out soon after dark because it was expensive to burn. He could not read or write: he had no bathroom, no pictures, no carpets, and very little except bare wood furniture.

In the course of a hundred years how things have changed! How much, in many ways, life has improved for us! Clothes are more plentiful, more beautiful, and cheap. Houses are better, though too many are still old and small, dark and unhealthy. Food is more varied, more pleasant to eat, and more health-giving. We are taller, heavier people who live longer and probably, for all our moans over aches and pains, have less ill-health than the people of other ages. The difference between 17*s.* 6*d.* and £4 17*s.* 1*d.* is a difference of "standard of living" as we should call it. Money will buy less to-day of some things than it did in 1840, but certainly the real wealth of the nation—the things we have for our use and to eat—has increased enormously over the last one hundred years.

THINGS FOR YOU TO DO

1 Draw two rectangles each ¼-in. wide, the first ⅞-in. long, the second 4⅞-in. long, The first shows the farm labourer's wage of 1840 (17*s.* 6*d.* is ⅞ of £1): the second shows my sister's household expenses. Divide the rectangles into parts according to how much was spent on each thing.

2 Add a third rectangle to show how your mother spends her housekeeping money.

CHAPTER XLII

YOUR FATHER AND MINE—AGAIN

YOUR father and mine have come a very long way since the days when they might have been expected to build their own houses, spin and weave their own clothes, collect, hunt, or grow their own food. Nowadays many men have jobs which do not seem to be particularly connected with filling these three most important wants—shelter, clothing and food, and yet, as we saw right at the beginning of the book, every man is really working to get these things for himself and his family through the money which he earns each week. How does this come about?

First we must know that everybody somehow or another helps somebody else. Let us start with the farmer whose milk we drink. Before we can get it where we need it, in our homes, the milkman has to bring it to us. Perhaps he carries it on a cart. Before he could get a cart somebody had to make it. Perhaps the cart has steel-rimmed wheels. Before it could have steel-rimmed wheels somebody had to dig the iron ore, and the coal to make the steel. Before the coal could be dug somebody had to make a shaft lined with bricks for the miner's cage to go down. Before you could have a brick-lined shaft somebody had to dig the clay to make the bricks. Now, digging clay to make bricks may not seem to you, or me, connected with the milk we get in the morning. But you see it is. If we follow out how any of the food, clothing and shelter we need are brought to us we shall find the same thing: it goes a long, long way from the starting point, and we shall find thousands of different workpeople co-operating. The division of labour ought really to be called—the co-operation of labour.

It would be very difficult for us if the man who dug clay for the bricks had to exchange the bricks for some coal, and take the coal to the forge to get some steel to carry to the man who made the cart and went with him to the milkman, so that they could all ask the farmer for a pint of milk as their share for the work they did. You can see how silly that would be: so, how do we manage instead? Everyone gets paid for the work he does, and the money is really a short cut to the things the worker needs to live. There was a time when every man produced everything he wanted for himself; then money was not needed. In the self-sufficient open field village money was only a little used, because people grew or made most of what they wanted for themselves; but where labour is divided between as many people as it is now, it would be quite impossible to live without money.

Suppose you have six glass marbles, and your friend has three foreign stamps which you would rather have than the marbles; what would you do? Oh, would you? Well, suppose he didn't want marbles but would only change for a water-pistol, what then? You would *either* have to find another boy who had a water-pistol who would take your marbles so that you could change the water-pistol for the stamps, *or* you would have to do without the stamps you wanted and keep the six marbles you were not so keen to have. There is one other thing you might be able to do: sell the marbles and buy the stamps. Your friend would then have the money with which he could later on buy a water pistol.

What has the money done for you? It has helped you to exchange what you have for something which you wanted, and money is no good to you unless it will help you to exchange things. Even money in the bank is useless unless you know you can buy real things with it, things you must have such as food, clothes and houses and things you don't really need so much—dolls and water-pistols, for example. Because your friend cannot see a water-pistol to buy now, he can save the money until he does see a water-pistol—that is, the money is a store or stock of something valuable. So then, money must be used whenever we have many things to be exchanged, and there are many things to be exchanged wherever there are millions of people doing hundreds of different jobs.

Your father and mine now spend their working lives making things in factories not only so that those things can be used in this country but so that they can be sent across the seas to be exchanged for wood for our houses, wool and cotton for our clothes, tea for our tea-pots, meat, wheat and cheese for us to eat. Do we gain anything by doing this? Yes, we do. Quite certainly we gain some things—those things, for example, such as cotton and tea, which we could not grow for ourselves anyway. We should have to do without them if there were not trade between us and other countries, or as we should say, international trade. We gain also because while we can do some things better than other countries can—such as making railway engines for Argentina—they can do some things better than we can—such as Argentina's keeping beef cattle for our meat. The Argentine gets more engines than if she made her own, and we get more meat in exchange than if we produced our own. It is much the same as each man doing a job at which he is specially good. Adding their work together the men who specialise make more than if all of them did all jobs.

In the past we have been very good at making things, and perhaps less good at growing things. It has paid us well to specialise in what we could do best. You have seen how, in the nineteenth century, Britain became the "Workshop of the World," making cotton and woollen cloth, and a host of other things for the rest of the world. Unhappily for us the rest of the world now wants our goods less than it did, for other countries have learnt, often from us, how to make what they need by using their own coal, their own iron, or their own water power. We saw that Japan began to make cotton cloth more cheaply than we could. Canada, Australia, and India, too, have begun to make many of the things they used to buy from us. If we cannot sell, we cannot buy, and so we have less than we had. Only by working harder in our factories can your father and mine produce cheaper goods which will still be bought by people abroad in exchange for the food, cotton and wool we must have to go on living as well as we did. We shall probably always have to buy less food from abroad from now on, and so we shall have to get our farmers to grow more for us, but we shall never again be self-sufficient. In my lifetime and in yours, our country will have to go on making much more than we ourselves need, so that we can get in return the raw materials for making still more things, and the food without which we could not live.

CHAPTER XLIII

YOUR FATHER AND MINE

FOR THE LAST TIME

ONCE upon a time, thousands of years ago, men using sticks and stones hunted through the forests which in those days covered much of our country. Often the men, their wives and children, went hungry. Their clothes were skins and their homes were rough shelters of branches and leaves. To-day, where they roamed, the tractor roars across the fields dragging a three-furrow plough to begin the growing of grain which may be stored a year or more before it is eaten. The man who drives the tractor wears clothes of cotton from the U.S.A. and wool from Australia, and he lives with his wife and children in a house built solidly of brick and tile, glass and cement.

In the course of these thousands of years, men in these Islands have come less and less to depend upon chance for a living. They know that to-morrow there will be food to eat and milk to drink. They know that if their clothes are burnt in the night they can still be sure of being able to get more in the morning. Our lives have become more and more safe as we have learnt to use the various things with which Nature surrounds us. Our tools are improved out of all knowledge since we learnt to use iron in place of stone; our food supplies have increased enormously and become safe since we learnt how to help Nature to put plant-food back into the soil. There is more, and there will always be more, still to be learnt. How man learnt or has failed to learn has been much of the story of this book.

Something else has been happening through these thousands of years. Men have been living in bigger and bigger groups. The hunter, like the Bushman to-day, lived with a small family, his wife, and two or three children. When the children were able to look after themselves they had to go somewhere else because, by hunting, only a few people could live off a very large area, and even then they had to keep on the move following the game on which they lived. Then, when men learnt to tame animals they lived, as the Kaffirs do to-day, in clans and tribes because more people could live off a smaller area by herding than by hunting. Laws had to be made to control the actions of those who were unmindful of their neighbours, who tried to take away their neighbours' goods or to kill them. Life became still more safe when men learnt how to grow food as well as to keep animals. Again, by planting crops, more people could live together and the tribe grew in number and in power, and perhaps after much fighting, one tribe was able to beat the other tribes surrounding it, and so form what we might call a nation. People belonging to it still had to be controlled: laws still had to be made: some kind of government, as we should say, was always needed.

One kind of government about which we have spoken is the Feudal System. You will remember that by it land and power were given in return for duties to some still more powerful person, until the King, who was master of all, was reached. To-day, under a democratic system, power is given to those people who are chosen by your father and mine to look after their affairs. Men have to learn to control themselves or let themselves be controlled, and rules and laws are as much needed now as they were under the Feudal System. Men cannot go on long living together unless there is some control of some kind—even in a classroom!

Perhaps you will have noticed, too, that during the nineteenth and twentieth centuries what each man did had to be more and more controlled. How long a man works, where he builds his house, the collecting of his rubbish, and so on, all are fixed for themselves by your father and mine and by their neighbours. To-day the government which they choose, and which sits in the House of Commons, or the local council, send you, their children, to school, give you free meals and will say how long you will be allowed to work. They pay a policeman and a doctor to look after you, a hospital to be in when you are sick, and a park to walk in when you are well—oh, and hosts of other things, too.

We in Britain have not always worked together, but you have seen enough in this book to show you that your father depends on mine, and my father depends on yours. Somehow in this work-a-day life, they belong together, and though they may not know one another, and live 300 miles apart, what your father does affects my father just as what my father does affects yours. When you grow up it will still be the same, only you will be the people we have been talking about as Your Father and Mine.

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